

MINING

CONGRESS JOURNAL

★
APRIL
1944
★

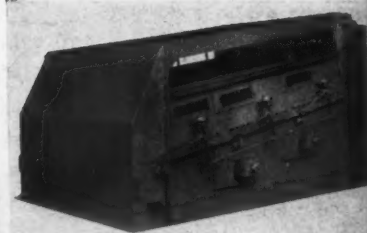
BACKING THE ATTACK...



U. S. Signal Corps

Coal Must
Be Prepared
For
War Too!

BEHIND the "Quality Coals" for record-breaking war-time uses, lies all the experience, technical skill and ingenuity of the Nation's coal preparation experts. R&S is proud of its share in this service to the industry.



Stump Air Flow Coal Cleaning Unit—
an R&S Feature for Air-Cleaning Fine
Coal

—Cleaning Plant at Clyde Mine,
Republic Steel Corp.

ROBERTS and SCHAEFER CO.

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A
JOURNAL
for the
ENTIRE
MINING
INDUSTRY

Published
by the
AMERICAN
MINING
CONGRESS





How to prevent a "pinch out" of this critical material... U. S. ROYAL MINING MACHINE AND LOCOMOTIVE CABLES

Many mines—alert to the possible consequences of electrical cable failure during the rubber shortage period—have set up organized programs of "cable care."

So that your drills will keep on working, your haulage equipment go on rolling and your machinery continue running—protect your electrical cables against early deterioration, undue wear and accidental damage. See that these few simple rules are strictly observed:

1. Store all cable in a cool, dark place.
2. Avoid overheating...use cable of adequate size...keep the number of layers of cable on service reels to a minimum.
3. Keep cable free from oil and grease.
4. Utilize short pieces of cable by splicing together for desired lengths. For good service and durability see that splices are well made...preferably vulcanized.
5. Avoid excessive flexing.



UNITED STATES RUBBER COMPANY

1230 Sixth Avenue • Rockefeller Center • New York 20, N. Y.

MINING

CONGRESS JOURNAL

VOLUME 30, NUMBER 4

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FOR APRIL 1944

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"WE ARE FIGHTING FOR LIBERTY, the most expensive luxury known to man. . . . We can't win the war on the assembly line or the supply line, but we can lose it there. The men who will win this war are the fighting men, in the air and in the mud. These are the men we serve. They will triumph in the end. It is our sacred duty and our high privilege to serve them. No matter what we give, no matter how we labor, we cannot approach their sacrifice. Their valor is a blazing torch to light our way."

—Lt. Gen. Brehon Somervell.



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Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress.

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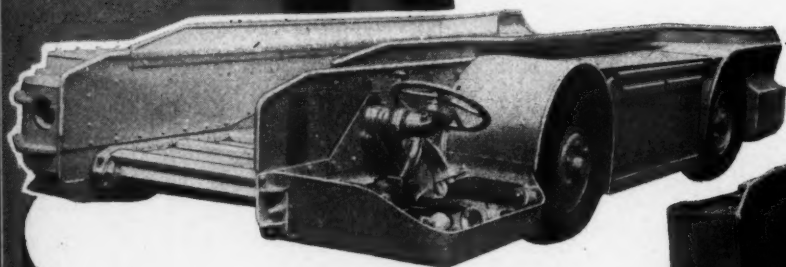


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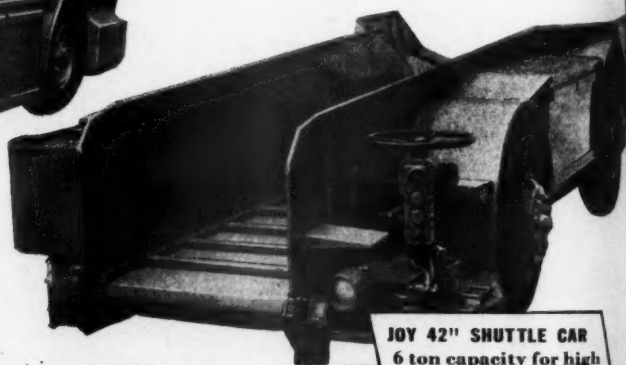
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FIRST AID TO MODERNIZATION



JOY 32" SHUTTLE CAR
3½ ton capacity for
low seam operations.



JOY 42" SHUTTLE CAR
6 ton capacity for high
seams.

Joy Equipment is engineered and designed by men who are thoroughly familiar with coal mining in all of its various phases. We will be glad to check your conditions . . . study your problems and advise you factually to the best of our ability.

*Consult a
Joy
Engineer*



JOY MECHANIZED EQUIPMENT

***SPEEDS OUTPUT
LOWERS COST***



JOY 11-Bu LOADER
A heavy duty machine
of high capacity, 8-10
tons per minute.

JOY 14-Bu LOADER. A high
capacity low vein ma-
chine—only 36" high
—5 tons per minute.

CAR
r high

JOY

MANUFACTURING CO.,
FRANKLIN, PA.



All the facts
from trolley to rail

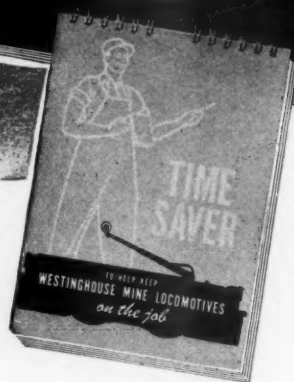
... SEND FOR THIS
BOOKLET **TODAY!**



Safety and economy on the job are realized with Westinghouse Explosion-Tested Mine Locomotives . . . especially equipped for safe operation in gaseous mines. This modern locomotive design overcomes disintegration of insulation and corrosive destruction of internal parts, thanks to an exclusive Westinghouse development . . . the **BREATHER** principle of ventilation which creates a free and forced circulation of air within the equipment . . . thus eliminating the formation of destructive acids.

Other Westinghouse developments are the vertical gearless gathering reel with easily accessible slip rings and brushholders to save inspection time, and the self-equalizing ribbon-wound resistor which minimizes overloading of individual sections. These and other features in Westinghouse Explosion-Tested Locomotives give you 24-hour war operation with minimum time out for maintenance.

For complete information, ask for Booklet B-3232. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.



**TO KEEP YOUR
LOCOMOTIVES** *on the job!*

Send for this pocket-size 40-page "TIME-SAVER". It is crammed with useful information which will save you time in inspection, lubrication and maintenance. Ask for B-3150.

J-90498

Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE



MINE LOCOMOTIVES

STEEL



We combine the
best features

of each
in

WOOD



AR-MOORED TIES



FOR HIGH-CAPACITY, LOW-COST TRACK

Ar-Moored Ties are made up of a standard steel mine tie securely anchored to a pre-formed, pressure-creosoted sawed oak base. They provide high-capacity, high-speed, high-safety track for main haulage ways and for working sections.

Ar-Moored Ties can be readily removed and repeatedly re-used as sections are worked out. They are made in various thicknesses: 2" (for thin seams), 3" and 4". Both regular and switch ties are available. Write for the new bulletin, just off the press.

KOPPERS COMPANY—WOOD PRESERVING DIVISION
PITTSBURGH, PENNSYLVANIA

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

*Trade Mark

PROTECTED POWER



For Hoists—Compressors



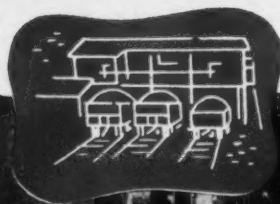
● This modern G-E factory-assembled metal-clad switchgear equipment provides circuit protection and metering for hoists and compressor drives at a newly equipped iron-mining project. Included are units for full-voltage starting of induction motors, for reactor starting of others, and for protection of feeder circuits.



For Motor-generator Sets



● Operating the metal-enclosed control equipment for three 250-kw motor-generator sets supplying excitation for a battery of ore separators. In the foreground are three enclosed motor starters which also serve the ore-preparation operation.



For Co-ordinated Motor Control

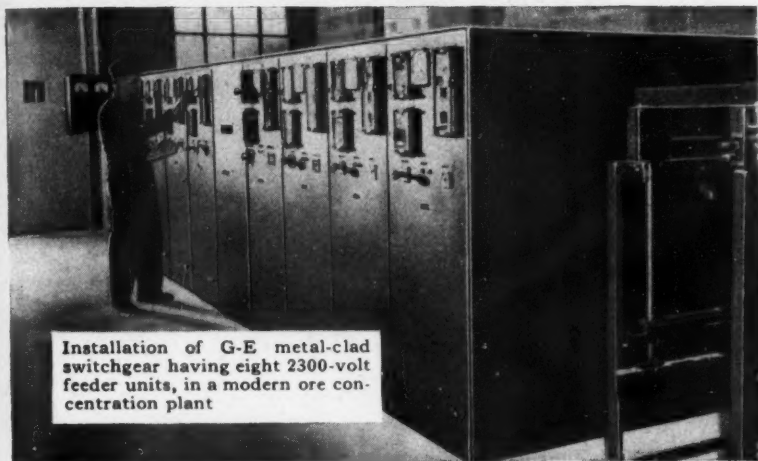


● This G-E Cabinetrol assembly is typical of centralized low-voltage control applied to coal-tipple operation. Standard enclosures are used in combinations matched to the job. All operations are controlled from a desk-type push-button station.

EVERY WEEK 182,000 G-E EMPLOYEES PURCHASE MORE THAN A MILLION DOLLARS' WORTH OF WAR BONDS.

for Mining and Preparation

USE G-E METAL-CLAD *Switchgear*



Installation of G-E metal-clad switchgear having eight 2300-volt feeder units, in a modern ore concentration plant

Now, you can protect the continuity of power flow to your operations with switchgear that's completely co-ordinated, completely metal-enclosed. G-E metal-clad switchgear reaches you in fully assembled units. You skid it into place, it's ready to connect. Installed costs are generally lower than for "home-tailored" jobs.

Many special features are built into G-E metal-clad switchgear which save maintenance time and help eliminate hazard to personnel: easily removable breakers which can't be removed when energized; sturdy mechanical interlocks; accessible drawout relays and meters.

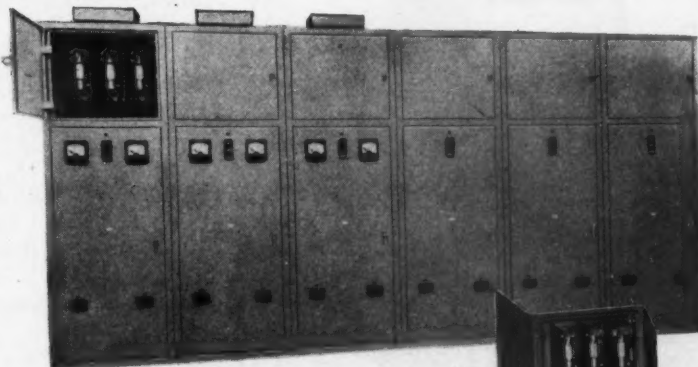
Our metal-clad switchgear meets any conceivable switching need up to 15,000 volts, 500,000 kva, and similar equipment is available for higher-capacity installations.

... AND METAL-ENCLOSED *Motor Control*

Whatever your motor-starting problem, a-c or d-c, 1 hp or 1000 hp, G.E. can furnish factory-assembled control equipment in a metal enclosure that, for the service conditions involved, means extra safety. Co-ordinated control equipment, grouped in cubicles or matched to form a unit control board, helps centralize operations of preparation or refining plants. Other standard controls are available in dust-tight enclosures, and in Type BM enclosures for use underground in gassy mines.



This popular type of oil-immersed a-c starter is designed particularly for use in dusty, corrosive, or hazardous-gas locations. It's available as a combination of magnetic starter plus manual circuit breaker, or starter alone.



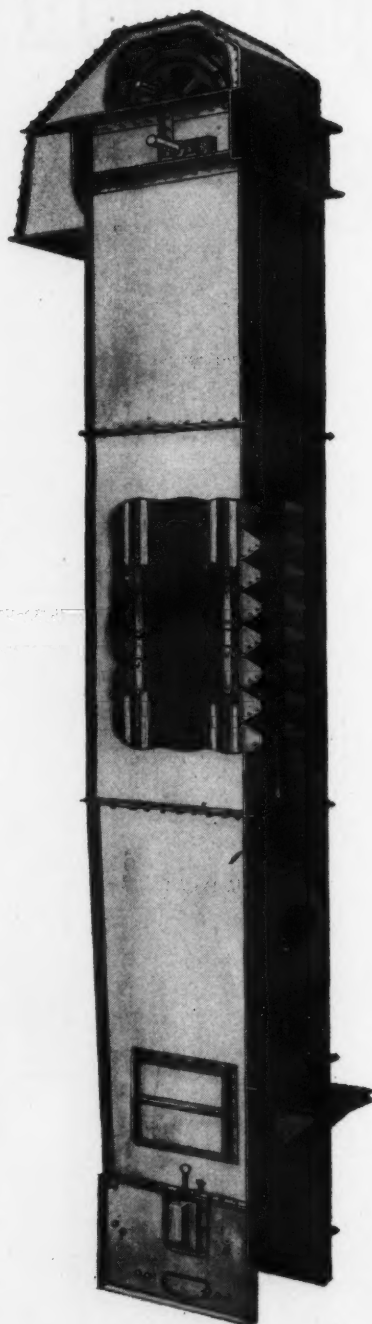
These metal-enclosed matched units combine starting and protection for 2300-volt a-c motor circuits. Included are types for squirrel-cage and wound-rotor motor starting. Above the enclosed oil-immersed contactor are current-limiting fuses in trunnion-hinge mountings which act as disconnect switches as well.



GENERAL ELECTRIC COMPANY, SCHENECTADY 5, N. Y.

GENERAL ELECTRIC

KEEP IT ON THE MOVE



with **HOLMES** **BUCKET ELEVATORS**

● The surest way to avoid bottlenecks in your mine is to keep the material on the move at all times. Holmes bucket elevators are designed to give you long dependable service with a minimum of maintenance and operating costs. They are fabricated to meet your specifications or Holmes' engineering department will design an elevator to suit your requirements.

● Holmes also manufacture a complete line of scraper conveyors, dewatering conveyors, lowering spirals, chutes, cast iron and steel bottoms for conveyors and all types of elevator buckets.

ROBERT HOLMES AND BROS., INC.

DANVILLE, ILLINOIS

DESIGNERS AND FABRICATORS OF MINING EQUIPMENT FOR OVER 70 YEARS

[Page 8]

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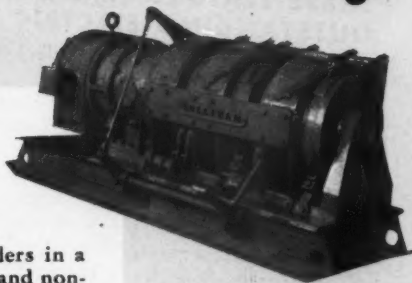
Pumice Corporation of America Loads its tonnage with a Sullivan Scraper Hauler

Unusual in the material mined and in the geological structure where operations are carried on... modern in its operations... the Pumice Corporation of America is one of the outstanding producers of high-grade pumice in the country. It works in a deposit from the eruption of a volcanic mountain 15 miles away. It works by removing a thin overburden, blasting the outcrop of pumice in open-face operations, and loading the broken tuff into mine cars.

To keep a safe slope-angle of the broken pumice, to take advantage of electric power and to insure minimum overall loading costs a Sullivan three drum Scraper-

Hauler is used for loading.

As with the Pumice Corporation of America, leader in its field... so as a matter of easily verifiable fact, leaders in a majority of other quarry and non-metallic mining operations have chosen Sullivan Scraper Loaders for the task of getting ore from the working face. The list of Sullivan users is a Blue Book of the industry... *a fact whose SIGNIFICANCE you should not miss*... SULLIVAN MACHINERY COMPANY, Michigan City, Ind. In Canada: Canadian Sullivan Machinery Co., Ltd., Dundas, Ont.



The Sullivan 3-Drum Scraper Hauler

Always pioneering more efficient mining methods, Sullivan developed the 3-drum scraper hauler for faster scraping and loading over a wide area, around pillars, posts and obstructions... and cut tramming and haul loading costs up to 60%.

Outstanding Exclusive Features

Automatic anti-backlash brakes that cut rope maintenance costs to minimum. Flange-mounted motor for easy assembly and perfect alignment. Motor head and bearing removable with motor... without disturbing gears, housing or bearings.

BIRMINGHAM
BOSTON
BUTTE

CHICAGO
DALLAS
DENVER

DULUTH
EL PASO

OFFICES
HUNTINGTON
KNOXVILLE

NEW YORK
PITTSBURGH
ST. LOUIS

SALT LAKE CITY
SAN FRANCISCO
SCRANTON

SULLIVAN

HOISTS • SCRAPER LOADERS • MINE CAR LOADERS



Tim Malloy says...

I work in a low seam and I'm glad that WHEAT provides a small battery so that we miners, who scramble around in low coal, don't have to carry a heavy lamp all day long.



THESE FEATURES MAKE WHEAT THE OUTSTANDING ELECTRIC CAP LAMP

1. Two bulbs (one for emergencies) — miner is never in the dark.
2. Headpiece weighs less than 6 ounces, Lamp Cord 6 ounces, Battery 62 ounces — Total weight of Lamp complete 74 ounces.
3. Headpiece molded of strong bakelite, sealed, moisture-proof and dust-proof.
4. Rubber battery case — non-conductor of electricity — a valuable safety feature.
5. Battery solution (free) limited to one ounce total both cells.
6. Lead-acid type battery maintains high voltage throughout shift (80 + percent efficiency) — year after year.
7. Battery charged through headpiece and cord of cap lamp — a daily test of all connections.
8. Designed for self-service charging system for lowest lamp-house operating cost.
9. To charge, headpiece is simply slipped on to key in charging rack, and turned to make contact. Nothing to take apart — unit-sealed construction.



SPECIALISTS IN
MINE LIGHTING
FOR 30 YEARS

KOEHLER MFG. CO.
Marlboro... Mass.

Eastern U. S. A.:
WHEAT LAMP SALES INC., Charleston, W. Va.
Western U. S. A.:
E. D. BULLARD CO., San Francisco, Cal.

Eastern Canada:
H. C. BURTON & Co., Hamilton, Ontario.
British Columbia:
B. C. EQUIPMENT CO., LTD., Vancouver, B. C.



BETTER LIGHT - LESS WEIGHT
NON-SPILLABLE

CURRENT COLLECTION COSTS CUT 75% BY USING MODERN O-B TROLLEY SHOES



Actual Field Test Shows Type L Trolley Shoes Outlive Trolley Wheels 26 to 1
... Shoe Collection Costs Per Ton-Mile One-Fourth that of Trolley Wheels

TEST DATA*

	Trolley Wheel	Trolley Shoes
Collector Cost	\$4.70	\$8.60
Replacement parts (axles, etc.)	1.32	—0—
Labor to install replacement parts	1.00	15.75
Labor to apply lubricant	—0—	22.50
Labor to apply lubricant	\$7.02	\$46.85
Total collector cost per unit	3900	100,000 tons
Amount of coal hauled per collector	\$0.001847	\$0.000469
Cost per ton Collector	7 miles	7 miles
Length of Haulage	\$0.000264	\$0.000067
Collector cost per ton-mile		

*Based on Actual test at producing Mine. Both Shoes and wheels were operated under conditions as nearly identical as possible. Re-use of unworn parts not considered. For more complete details about the test and the results obtained, see O-B Haulage Ways, February, 1944. Write for your copy.

For Longer Wire Life . . .
Lower Collection Costs . . .
Specify O-B Trolley Shoes

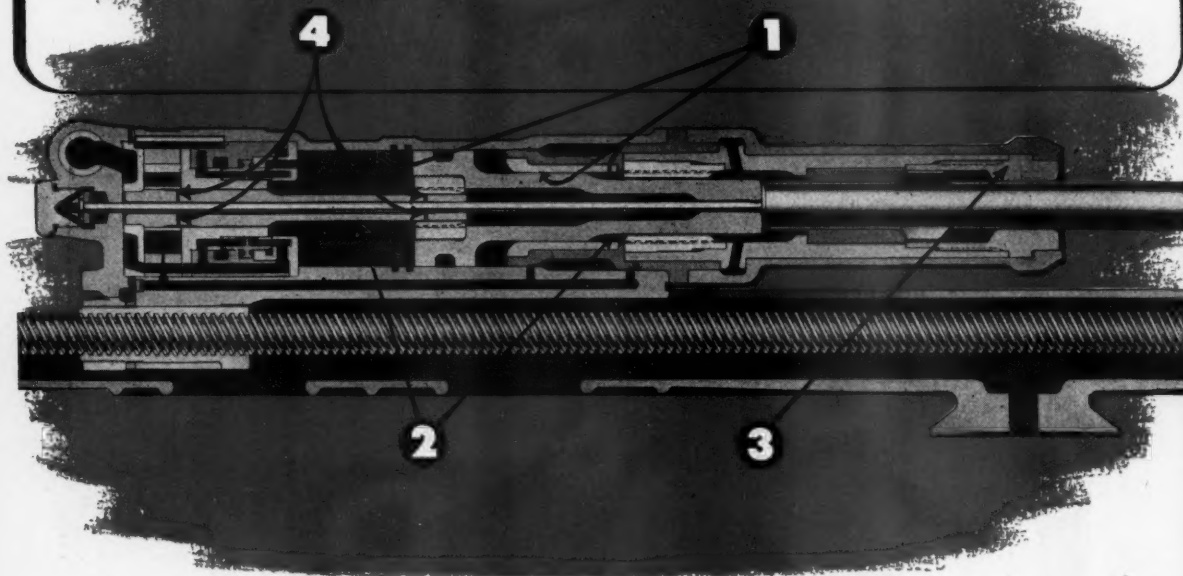
Ohio Brass

MANSFIELD, OHIO

Canadian Ohio Brass Co., Ltd., Niagara Falls, Ont.

KEEP BUYING WAR BONDS

HOW CLEVELAND DRIFTERS *are better . . .*



1 HONING OF CYLINDERS. We take out the minute "hills and valleys" left by finish grinding operations. *Result*—the machine lasts longer and maintains efficiency.

2 WE GRIND THE FLUTES of hammers and rifle bars. *Result*—friction is reduced, and binding due to heat treat warpage is entirely eliminated.

3 SPLINED CHUCK JAW. This exclusive feature permits the chuck jaw to take 14 different positions in relation to the chuck bushing, resulting in longer life for the latter. Also, the design prevents the scoring of the inside of the chuck housing, often characteristic of other constructions.

4 OIL CHANNELS IN RIFLE BAR insure proper lubrication of this important part. This design is *patented*, and is *exclusive* with Cleveland drifters.

• **PENTRATING.** We penetrate the parts. *Result*—rust is prevented, and there is less danger of damage if oiling is neglected.

• **SCIENTIFIC, SKILLFUL HEAT TREATING.** *Result*—uniform hardness penetration that "armor plates" parts against breakage from fatigue or shock.

• **THE LINE IS COMPLETE.** Three standard sizes, in the 3", 3½", and 4" classes. Either crank or automatic feed.

• *These are some of the Cleveland advantages. May we send a bulletin or catalog to complete the story?*

THE CLEVELAND ROCK DRILL CO.

Division of The Cleveland Pneumatic Tool Co. • CLEVELAND 5, OHIO

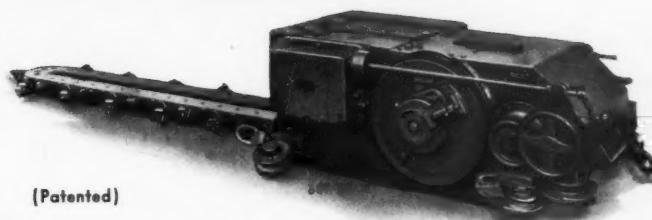
BRANCH OFFICES: Birmingham, Ala.; Boston, Mass.; Buffalo, N. Y.; Butte, Mont.; Chicago, Ill.; Cincinnati, O.; Dallas, Texas; Denver, Colo.; Detroit, Mich.; El Paso, Texas; Ironwood, Mich.; Lexington, Ky.; Los Angeles, Calif.; Milwaukee, Wis.; New York, N. Y.; Philadelphia, Pa.; Pittsburgh, Pa.; Richmond, Va.; Salt Lake City, Utah; San Francisco, Calif.; St. Louis, Mo.; Wallace, Idaho; Washington, D. C.

Canadian Distributors: Purves E. Ritchie & Son, Ltd., 658 Hornby Street, Vancouver, B. C.

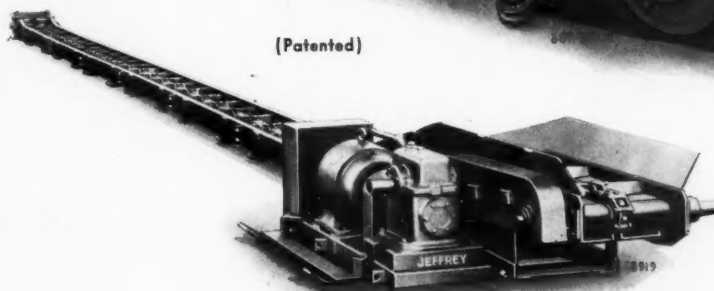
JEFFREY MECHANICAL

FOR LOW COAL

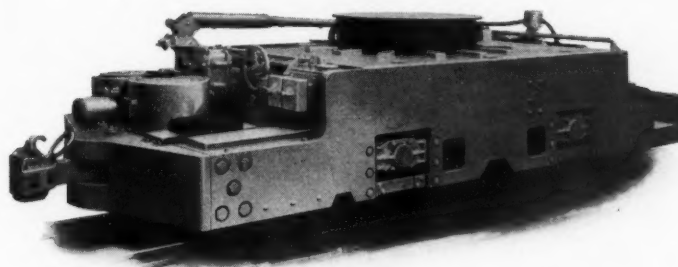
A unit from the Jeffrey mighty "35" series Short-wall coal cutters. Eight types including five for conveyor mining.



(Patented)



Jeffrey Type 61-HG
Face Conveyor



Jeffrey 8-ton Explosion Tested Gathering Locomotive.



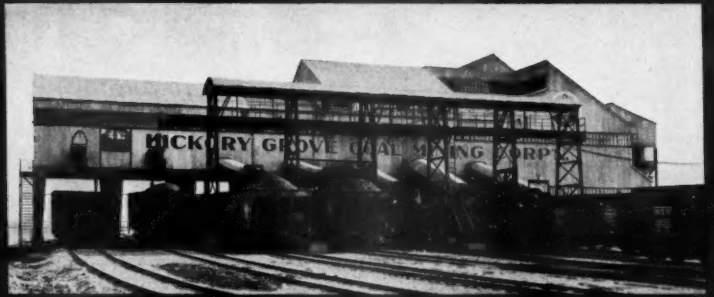
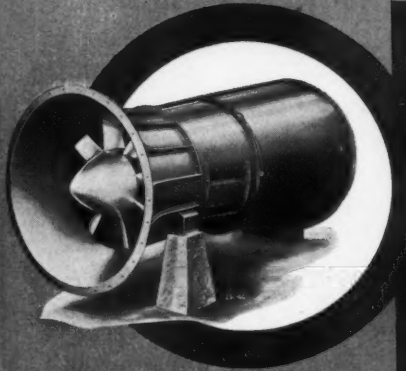
(Patented)

Jeffrey A-7 Hand Held Drill (left)—Drilling service at your fingertips. Also Post Drills and Drilling Machines. Jeffrey Aerodyne Midget Blower (right)—High capacity—ideal for low seams.



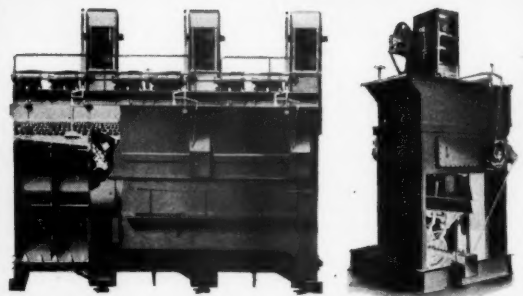
- The Jeffrey service policy has always been to help you keep your mine plants as modern, efficient and as profitable as progress will permit . . . by making your operating problems our equipment problems . . . and constantly improving equipment by pyramiding experiences. Our progress through the years, since 1877, has proved this to be a matter of good business, both for you and for us. Some of this modern Jeffrey mining equipment is shown on these pages.

MINING EQUIPMENT



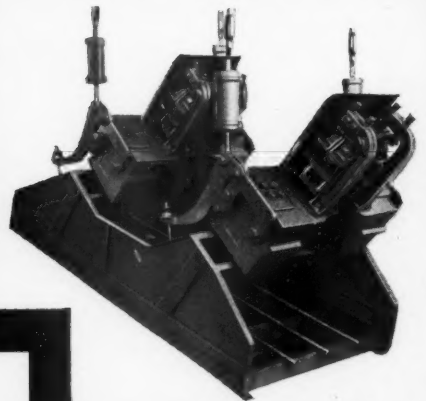
• Jeffrey equipment service extends to the tippie, complete installations or individual units . . . to storage systems at the mines . . . to coal and ashes handling in the power plant . . . to conveyor methods of loading and unloading at docks or in wholesale or retail yards.

Feeding, conveying, screening, washing, sizing and ventilating . . . Jeffrey builds efficient equipment to do them all . . . to complete your production job after the coal is out of the ground. Also a complete line of replacement parts.

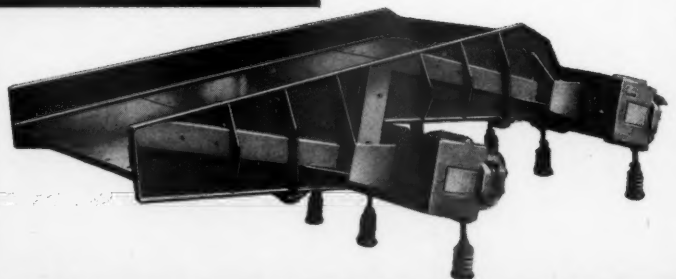
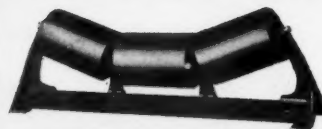
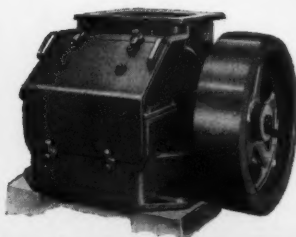


A complete line of chains for every conveying, elevating and driving need. Three types are shown at the left. A Jeffrey Astrodyns Mine Fan, a modern Jeffrey-equipped tippie, two types of Jigs, a Jeffrey-Traylor electric vibrating Conveyanscreen and a J-T feeder, and a Jeffrey 3-roll self-aligning belt idler . . . are shown at the right and below.

(Patented)



Jeffrey Flex-Roll Crusher
A small inexpensive unit for auxiliary use and for small capacities. Ideal for taking oversize coal from screens, providing accurate control of top size. Investigate this new unit.



Ground Crew

Next time you see a bomber overhead—stop and think for a minute of what it took to put it up there.

Think of the aluminum that sheathes its sleek lines . . . aluminum from a plant that was only a blueprint yesterday. Think of the propellers and the engines that drive it . . . propellers and engines from factories that were only corn fields the summer before. And think of the men who fly it and fight it . . . men schooled at air fields and training stations which were created virtually overnight.

All of these facilities and more were required to put that bomber up there . . . and all of them were provided by a vast ground crew that numbers its men and machines in the millions—America's Construction Industry.

Here, again, is a job that called for the best in every man and every piece of equipment . . . a job that required power of proven stamina, economy and dependability . . . a job that demanded nothing less than *Cummins Diesel Power*. CUMMINS ENGINE COMPANY, Columbus, Indiana.

This is the sixth and last in a series of advertisements depicting the war-time role of Cummins Diesel Power in the nation's basic industries. In the construction field, Cummins Dependable Diesels are used to power all types of heavy-duty dirt moving and material handling machinery—trucks, shovels, draglines, tractors, compressors and many other kinds of equipment. The giant 60-yard Tournapull illustrated here is powered by a pair of 200 hp. (Supercharged) Cummins Diesels.

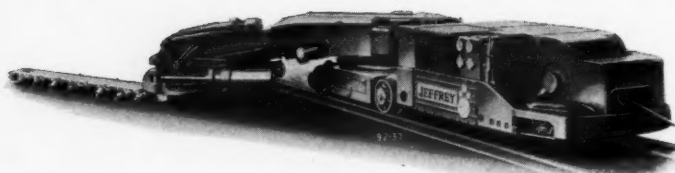


To meet Today's Production and Tomorrow's Cost Demands

JEFFREY

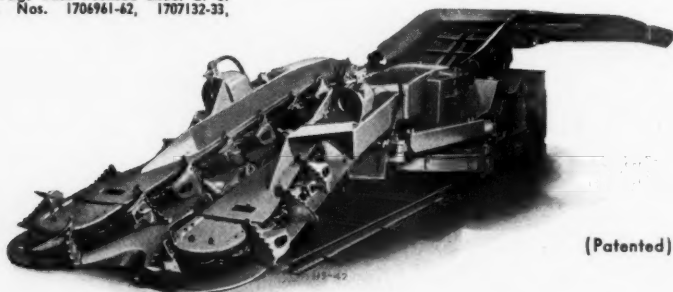
MECHANICAL MINING EQUIPMENT

The Jeffrey "BIG THREE"



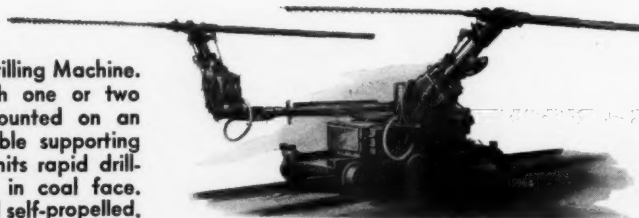
Jeffrey 29-U Universal Coal Cutter — Hydraulically-operated.

Pat. and Pat. Pdg. Also licensed under E. C.
Morgan Pat. Nos. 1706961-62, 1707132-33,
1953325-26.



(Patented)

Jeffrey L-600 Loader for mines with unrestricted height.



Jeffrey 56-A Drilling Machine.
Available with one or two
drills each mounted on an
easily adjustable supporting
arm that permits rapid drill-
ing anywhere in coal face.
Track-type and self-propelled.

THE

Sales Office

Service Station

Foreign Plant

Jeffrey

**SERVES THE INDUSTRY
BELOW AND ABOVE GROUND
FROM FACE TO RAILROAD CAR**

**CUTTERS
DRILLS
LOADERS
LOCOMOTIVES
FANS
CONVEYORS
BLOWERS
JIGS
CRUSHERS
SCREENS
RENEWAL PARTS**



THE JEFFREY MANUFACTURING COMPANY

Established in 1877

912-99 NORTH FOURTH STREET, COLUMBUS, 16, OHIO

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Buffalo

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Cincinnati
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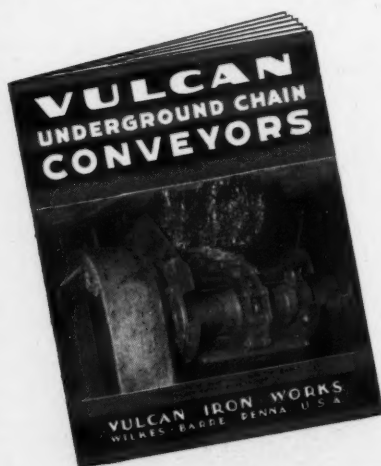
Jeffrey-Gallian (Pty), Ltd.
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the severest
requirements
of Modern
Mechanized
Coal Mines.



**VULCAN
ROOM CONVEYOR**
with fully-enclosed speed-
reducing drive unit and
suitable motor.



This Vulcan Chain Conveyor Bulletin contains large clear illustrations and concise descriptions of all standard parts and assemblies, together with engineering drawings and complete working data. Easy to read and easy to understand. Write for free copy. No charge or obligation of any kind.

WIDELY known for many years as manufacturers of sturdy Shaking-Chute Conveyors the Vulcan Iron Works has also developed, within recent years, a complete line of Underground Chain Conveyors embodying the same high standards of quality and the same extra margins of strength and capacity that have distinguished all other Vulcan products for more than ninety years.

Hundreds of successful installations in both anthracite and bituminous mines now enable us to offer Vulcan Chain Conveyors as a thoroughly "seasoned" product with proved ability to meet the severest requirements of modern mechanized coal mines for either face, room, gathering or elevating service. Deliveries are subject to approval of the War Production Board but inquiries are cordially invited and will receive prompt attention from our experienced engineers and executives.

VULCAN IRON WORKS

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Main Office and Works **WILKES-BARRE, PA.,** New York Office 50 Church

Heavy-Duty Electric Hoists
Self-Contained Hoists
Scraper Hoists
Car-Spotting Hoists
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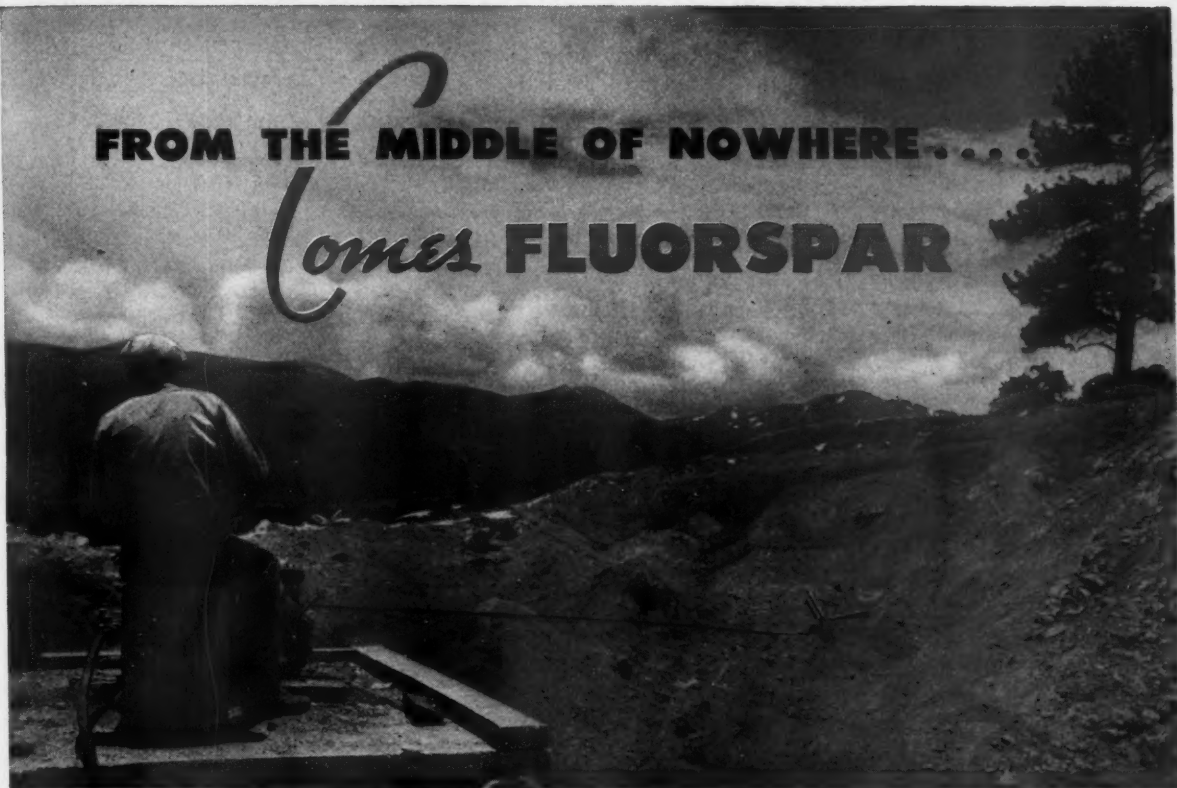
Shaking-Chute Conveyors
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Steam Locomotives
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geared and electric drive
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FROM THE MIDDLE OF NOWHERE . . .

Comes **FLUORSPAR**



The mining of fluorspar ore from a mountain "in the middle of nowhere" is no easy task. The view above shows a fluorspar deposit that is in loose formation, not conforming to conventional vein form.

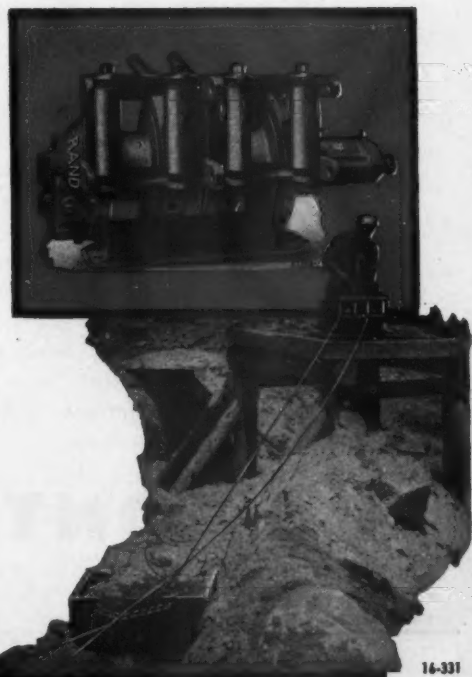
The remoteness of this property and the method of mining called for a compact, lightweight, rugged, air-powered scraper hoist to gather, transport and load the ore. That is why the Size A4NN-OJ was selected. It is a 250 lb. compressed air-driven scraper unit...a mechanical loader that *two men can carry*. This reliable machine handles all of the ore mined, transporting it from the open cuts to the loading chute under the timber platform.

With a rated rope pull of 850 lb. at 125 ft. per min., the "Lightweight" A4NN-OJ is widely used for scraping jobs in thin narrow veins or stopes, irregular veins, cross-cuts, for spreading waste, development work, sideswiping, station cutting, and many other materials handling jobs.

You will want to know more about this hoist and also our complete line that includes a size for every kind of mucking work. Send for a copy of our Slusher Hoist Catalog, Form 2379-B.

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16-331



"Lump Coal" C saves time



War won't wait. Production schedules all along the line must keep pace with the need for material. Coal keeps the wheels turning.

"Lump Coal" C is widely used for this reason. It is a low velocity Du Pont permissible which saves time and increases production.

When "Lump Coal" C is used, fewer drill holes are required, due to its wide-spreading range. It produces a minimum of toxic gases,

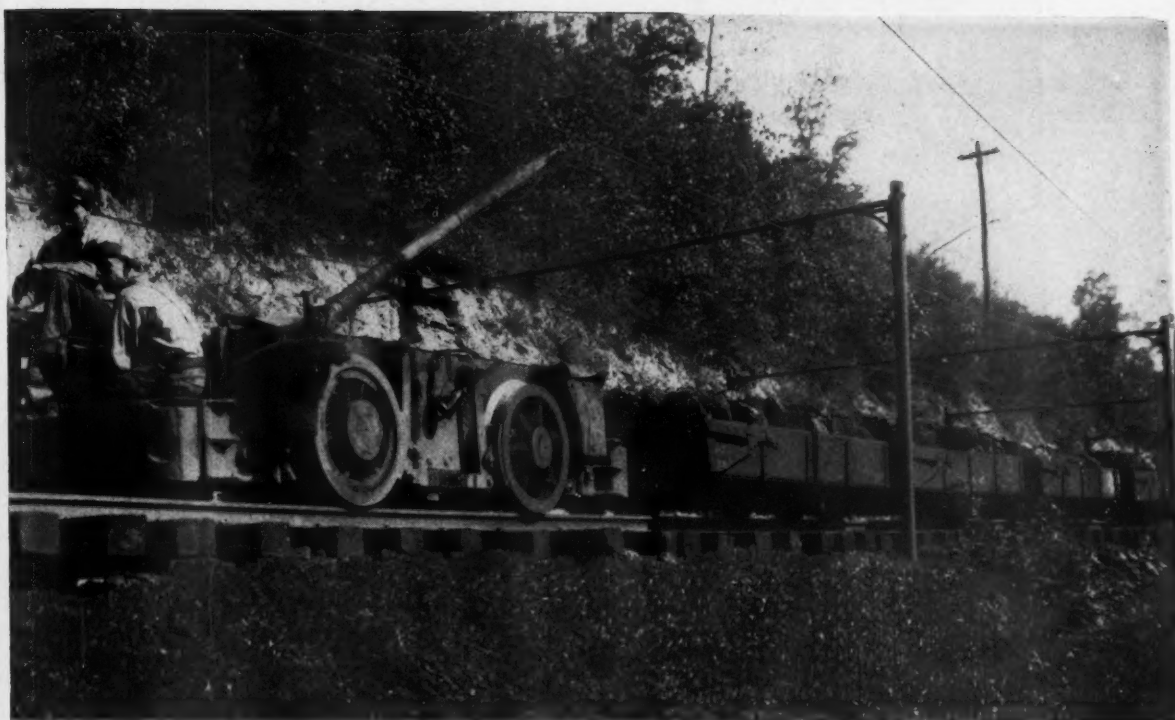
which are quickly removed by ventilation. Loading the coal is made quicker and easier, because the slow-heaving action of "Lump Coal" C pushes the big lumps far out from the face. And the coal contains a large percentage of good firm lump that will easily take the hard knocks of transportation.

Get the facts on "Lump Coal" C. Ask any Du Pont representative or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington, Delaware.

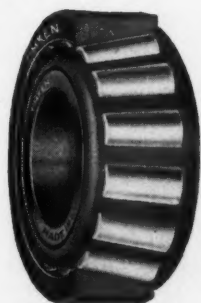
DU PONT PERMISSIBLES


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[Page 16]



Economical Hauling means . . TIMKEN BEARINGS



TO JACOBS FORK-POCAHONTAS COAL COMPANY

This photograph, made at the Squire, W. Va. mine of Jacobs Fork-Pocahontas Coal Company, shows some of the modern type steel cars—all equipped with Timken Tapered Roller Bearings—in use there. These cars have an average capacity of $4\frac{1}{2}$ tons of coal apiece, although some carry from five to six tons.

The first lot of Timken Bearing Equipped cars went into operation at the Squire mine when it was

opened in 1936. Additional cars have been purchased from time to time and at present there are 285 Timken Bearing Equipped cars in service.

So satisfactory has been this coal company's experience with these cars that they have declared Timken Bearings to be the only bearings acceptable to them for mine car service—and so have hundreds of other mine operators. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

INSTEAD OF CRUSHING COAL...

The American ROLLING RING CRUSHER

SPLITS IT TO UNIFORM SIZE FOR STOKER USE

THIS IS
Why!



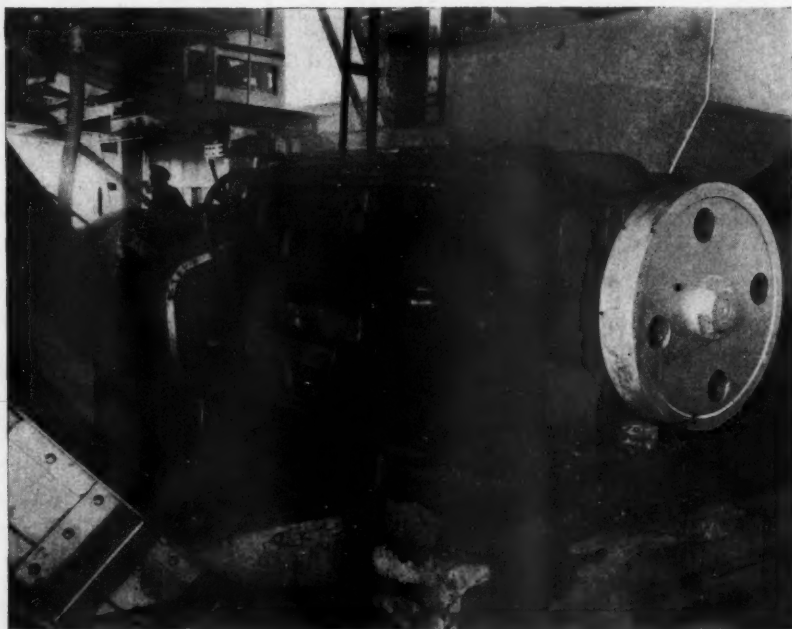
THE REVERSIBLE
MANGANESE STEEL
SHREDDER RING

A PATENTED FEATURE—is found only in the American Rolling Ring Crusher. It splits the coal instead of crushing it, thereby assuring a uniform size of crushed coal. An adjustable grinding plate makes it possible to secure properly sized coal for either stoker or pulverized coal burning. The crusher can be adjusted to make either a maximum or minimum amount of fines.

Not only does this modern crusher handle all coal sizes but when you have 1" or minus domestic stoker coal it will do the best job on the basis that it will produce less dust or fines. This crusher is an economical and flexible unit—its power requirements are reduced to a very low figure—its dependable operation saves on maintenance. There's accessibility at all times—the crusher construction is simple as is the operation.

Find out how you can use it and save more money.

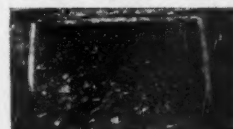
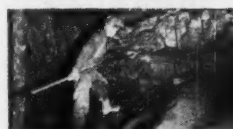
Write us regarding your coal sizing problems. Our engineers will be glad to tell you the complete facts about this crusher and how its engineering features work to your benefit. Names and addresses of many prominent users furnished promptly on request.



AMERICAN PULVERIZER COMPANY

ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS

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Check your cutter performance

But proper cutting is only part of the picture
... the initial preparation for the vital work
of the blasting agents that must bring down
the coal you want—as you want it.

Select the correct explosive...

Since AMERICAN explosives are products of
intensive research, chemical control, thorough
inspection and unremitting care in manufac-
ture, there is a grade exactly suited to the
requirements and conditions in your mine.

• Capable field engineers are available at your call.

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POWDER**
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ACCESSORIES**

American Cyanamid & Chemical Corporation



A Unit of American Cyanamid Company

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WHAT DOES IT HAVE That Drill Runners Want?

WHY do drill runners prefer the Gardner-Denver CF89H Continuous Feed Drifter?

What does it have that makes it the top choice at so many mines?



Gardner-Denver
CF89H
Continuous Feed
Drifter

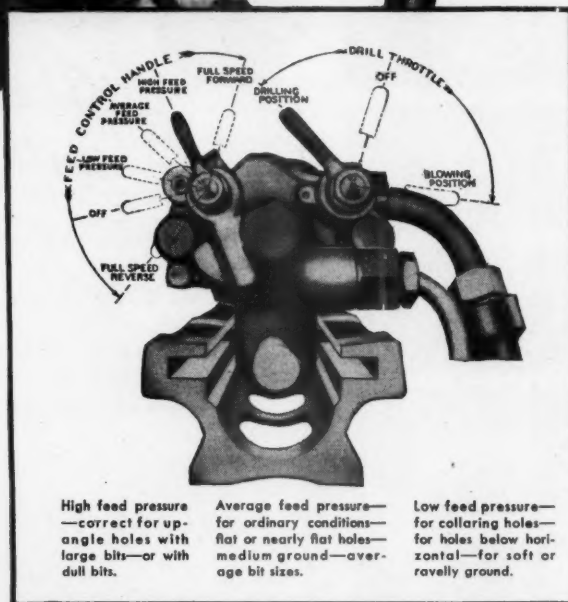
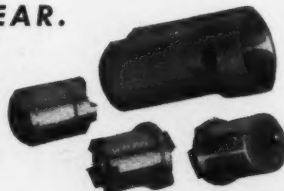
1 LESS VIBRATION—because the feed motor is built into the drill proper, its weight reduces vibration—helps to absorb recoil. Drilling is easier, the set-up is more secure—safer, and maintenance costs are reduced.



2 EASY ACTION—only 60 strokes of the feed motor in drilling a 24-inch change. This easy action cuts down wear and tear—prolongs life of feed motor—makes drilling easier for the drill runner.

3 LESS CHUCK WEAR.

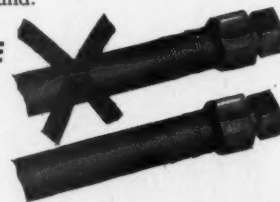
The built-in motor feeds the drill neither too tight nor too loose, but in just the right relation to the shank—makes chuck parts last longer.



4 EASIER CONTROL. All controls are grouped on drill backhead within easy reach of drill runner. No stretching between feed control and throttle when easing drill through tough or fitchery ground.

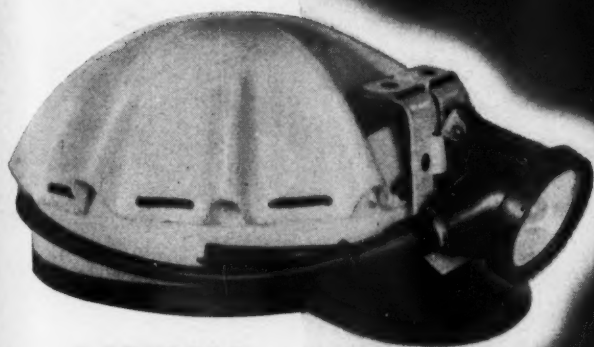
5 SINGLE AIR HOSE

feed motor receives air direct from main air hose—eliminates need for extra hose. One line oiler lubricates both feed motor and drill.



PLUS a host of additional features including shorter overall length which permits greater pitch for drilling the cut holes in narrow drifts or cross cuts—enclosed construction that protects all moving parts from abrasive dust and sludge—higher drilling efficiency because drill is always held in proper relation to the shank—exceptionally low air consumption. For complete information about the drill runner's choice—the CF89H, write:

Gardner-Denver Company, Quincy, Illinois.



PORTABLE ELECTRIC CAP LAMPS

"Powered by Gould
Glasskled Kathenode"

688,000,000 TONS IS A LOT OF COAL!

★ This is the tremendous production goal facing coal producers for 1944 if they are to meet the demands of industry. To reach this goal every effort must be made to get the most from existing manpower and equipment.

This means that your men must be equipped with the best mining equipment available in order that they may attain peak efficiency.

Portable Electric Cap Lamps will aid your men in reaching this goal for they are designed for today's modernized coal mining. The unfailing light of Portable Lamps plus the added head protection of Portable's Cool Caps will help keep your men on the job and enable your mine to meet its production quota.

Write today for information on installation of Portable Electric Cap Lamps and other mining equipment.

CONSULT PORTABLE FOR:

- Cool Caps and Hats
- Electric Cap Lamps
- Flame Safety Lamps
- Trip Lamps
- Permissible Flash Lights
- Shot Firing Equipment
- Safety Shoes and Boots
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- Haulage Safety Equipment
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Safety Caps and Hats • Electric Cap Lamps • Flame Safety Lamps • Trip Lamps • Permissible Flash Lights
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CAN ONE
BATTERY
DO THE
WORK OF
TWO
?

What Happened When An Electrician Tried To Find Out

Early in 1941, an industrial plant converted to war production and changed from an 8-hour to a 24-hour day. But when the Edison field engineer recommended spare batteries for the industrial trucks, the plant electrician replied "We don't need spare batteries. We'll find enough time for charging during lunch periods and early morning hours. We know our Edison Batteries can 'take it' even if we overwork them." And in this he persisted in spite of every warning.

Then, two years later, he told the Edison field engineer that the batteries were not holding up. At the field engineer's recommendation tests were conducted, and the batteries delivered 110 per cent of rated capacity. This finally convinced the electrician that, although the batteries were "taking it" as he had insisted they would, there simply was not enough time for charging and he agreed at last that he needed spares to keep his trucks in 24-hour service.

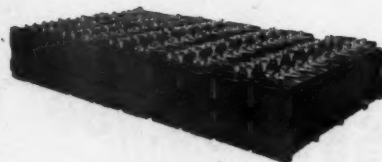
The fact that these batteries did "take it" as the electrician expected is no argument for trying to make one battery do the work of two. It is, however, an impressive demonstration of dependability under intolerable conditions, and it testifies to that reserve of dependability which alkaline batteries have available under all conditions.

Some of the unique characteristics of the Edison Alkaline Battery which account for its extraordinary performance are cited in the column at the right.

EDISON STORAGE BATTERY DIVISION
THOMAS A. EDISON, INCORPORATED, WEST ORANGE, NEW JERSEY

Edison
ALKALINE BATTERIES

[Page 22]



ADVANTAGES OF THE EDISON ALKALINE BATTERY IN MINE LOCOMOTIVES AND SHUTTLE CARS

- ★ It is durable mechanically. High strength steel construction is used in the containers, grids, pole pieces, etc. The electrolyte is a preservative of steel.
- ★ It is foolproof electrically. It may be accidentally short-circuited, over-charged, over-discharged, or even charged in the reverse direction without injury.
- ★ It can be charged rapidly. It does not require critical adjustment of charge rates and, therefore, can be charged directly from the d-c mine power supply. It has no finish-rate limitations. It requires no equalizing.
- ★ It withstands temperature extremes. It is not damaged by freezing. Free air spaces on all sides of all cells provide ventilation for rapid cooling under high temperature conditions.
- ★ It is simple to maintain. Merely charge adequately, add pure water, keep clean and dry.
- ★ Its tray assembly and cell connections are extremely simple.
- ★ Its life is so long that its annual depreciation cost is lower than that of any other type of storage battery.

MINING CONGRESS JOURNAL

Published for the Entire Mining Industry
by The American Mining Congress
S. A. TRENGOVE, Editor

Volume 30 APRIL, 1944 Number 4

Labor Relations Should Be Simplified

IT IS gratifying to note the broad range of informed opinion now being expressed in favor of re-vamping the present complex labor relations set-up. Too intricate to allow a quick decision on any dispute, the current methods of solving labor issues are irksome and disheartening to many. Such a situation is to be expected, growing as it has out of the complicated origins of politics and war. American industry, long perturbed over the continued "intrusion" of Government into labor affairs, may now take heart at the recent utterances of numerous authorities. Among them are some of our greatest industrial statesmen. The uniform tenor of these expressions indicates a strong conviction that the whole industrial relations picture must be simplified.

According to William M. Leiserson, Chairman, National Mediation Board, a sort of paradox exists in that strikes are still with us while labor and management are in closer agreement than ever before. Dr. Leiserson, in a speech before the Athenaeum Society of Summit, New Jersey, called attention to this and laid the blame for much current industrial strife at the door of Government itself. From a clear analysis of the whole broad picture, he noted certain "good signs," that "reveal an awareness that we have been straying from the fundamental purpose*** That purpose is to depend more and more on bargaining between equal parties to determine wages, hours, working conditions, and adjustment of labor disputes in order to reduce to a minimum action by the Government on the myriad details of the labor relationship." He feels that if, "we reorganize and centralize our many war labor agencies,***war production can be carried on co-operatively with peaceful labor relations and little time lost through work stoppages." He further voiced the concern of many that Government control might well become so ingrown during the war that it will have to be operative afterward. This to the detriment of free enterprise.

Reviewing other current opinion on the subject we find a pretty general agreement on the need for simplification as can be brought about only by employer and employees being permitted to get closer together. Witness a quote from the third annual report of the Truman committee: "Experience has taught us that our country will flourish best when

least hampered by Government control" and further, "the job (post-war) is essentially one of simplification, so that industry and labor can make their own plans, for the success and failure of which they and they alone will be responsible." Members of the War Labor Board have recently taken a similar stand.

The report of the Senate Special Committee on Post-War Economic Policy emphasized it thus: "The economic life of this nation must not be permitted to become dependent upon Washington directives for peace as it has been for war."

Perhaps at last the ball has begun to roll in the right direction. The position of private enterprise may well become strengthened and advanced by a new wealth of evidence which possibly could not have arisen but from the cauldron of war. Now we know all too well the difficulties of too much Government control. We guess that that's one of the reasons why we liked so well Eric Johnston's recent speech at Boston University. We were impressed not only with his now famous "dog-house" warning but also with his concluding words: "Make a better choice. Work together and stay free. If you stay free. I have no doubt of the result—a strong America, an America unlimited."

Coal Mine Manpower

THE deferment of young coal miners so essential to the war production picture has now been arranged on about a 50-50 division basis in eight key coal-producing states. General Hershey has authorized 90-day deferments to coal miners aged 22 to 25 years (with 3 or more years mining experience) in Pennsylvania, West Virginia, Virginia, Alabama, Washington, Tennessee, eastern Kentucky, and southern Wyoming. All coal miners under 22 are now subject to induction as are all under 26 in coal mining states not listed above.

Under this plan approximately 10,000 young coal miners will receive deferments, with induction of the other 10,000 calculated to cost some 14,000,000 tons of coal. This plus the 26,000,000 ton shortage already forecast by the Solid Fuels Administration would make the total deficit 40,000,000 tons for which little relief is in sight. Thus it falls to all of those remaining in the mines to reduce this shortage to a minimum.

No opportunity for improved production can now be passed up if some of us are to avoid eating our Christmas dinner in our overcoats. It is time to call once more for a sharp reduction in absenteeism and the maximum effort of everybody on the job.

Miners and operators alike will have to press forward and utilize every reasonable means to obtain optimum results. The soldiers of the mines can now further implement the soldiers in the foxholes in this newly stepped-up fight to maintain our birthright of freedom, the complement of which is a strongly correlated sense of responsibility.

Mechanized Operations at Kirk Coal Mining Company

Conversion from Hand to Mechanized Operations Increases Overall Efficiency

THE Kirk Coal Mining Co. has been able to maintain output in spite of manpower loss to the services and direct war industries. The mine is operating in the No. 9 seam near Beech Creek, Muhlenburg County, Ky. A slope opening was made in September, 1938, and hand loading of coal was practiced until August, 1941.

The No. 9 seam ranges from 62 to 66 in. thick in this locality. Immediate roof is a tender shale from 15 to 18 ft. thick. Above the shale is a firm sandstone from 20 to 40 ft. thick. Above the sandstone is clay and earth. Sandstone is not present over the outcrop workings, bottom is a very soft fireclay, vertical cleavage is irregular and cannot be taken into consideration in mine layout.

Entries are systematically timbered with sawed 6" x 8" x 12' crossbars set on legs. The producing territory is working near the outcrop and the same timbering system is used in the

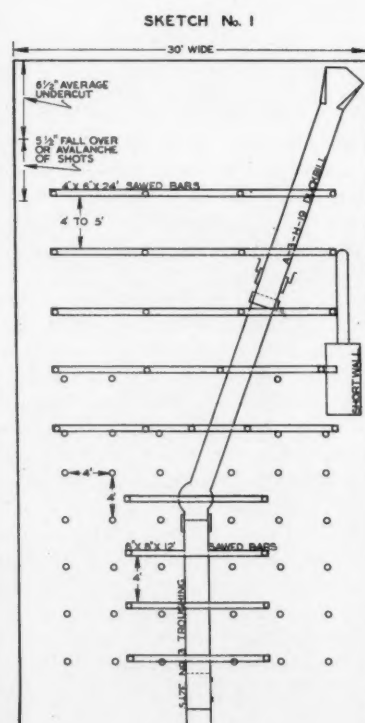
rooms, with five 4" x 6" x 24' sawed crossbars carried on screw-type timber jacks at the working face. As the face advances, the rear bars are replaced by 6" x 8" x 12' bars placed so the center of the bar is along the center of the room. Six rows of posts on 4-ft. spacings are used to augment these bars. The 24-ft. bars are advanced with each cut. (See sketch 1.) Under hand loading, the underground personnel consisted of 145 men, the mine was worked single shift and produced 1,000 tons per day.

Duckbill Shaker Conveyors Installed

By August, 1941, men were leaving for military training and production began to suffer. Five G-20-B-77 shaker conveyors with No. 3 troughing and A-3-H duckbills were installed and worked double shift. The underground personnel for both shifts consisted of 82 men. Tonnage was



Loading out the snub shot



maintained and now a production of 1,000 tons per day is being taken from five active working places.

This company has worked out a high degree of timing of the effort of the crew members. The system is so set up that it will take care of a large variation in mining conditions. For a tender roof condition the timbering shown in sketch 1 was developed. It is strictly adhered to, except in some sections where the short crossbars are replaced by 4" x 6" x 4' cap pieces set on 6-in. tip diameter posts.

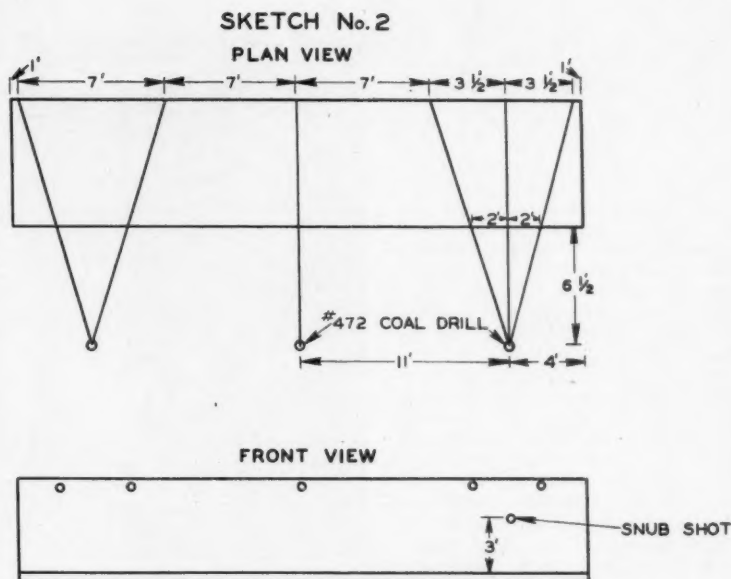
To overcome the handicap of soft fireclay bottom, about 3 in. of bottom coal is left down and cutter bars were changed from 6½ to 7½ ft.

Duckbills were equipped with 16-ft.

shovel troughs when received from the manufacturer. It was found they were not extensible enough when used with a 7½-ft. cutter bar. It was necessary to start the loading on the left-hand side of the room and load about one-half of the fall, stop and extend the pan line and load the second half from right to left. That meant that three-fourths of the fall was loaded before the cutting machine could be started. By welding a 3-ft. extension to both the shovel and feeder troughs in the duckbill enough extensibility was gained so that loading could be started on the right-hand side of the room. Now less than one-half of the fall needs to be loaded before the cutting machine is started. This allows a greater degree of overlap of the cutting and loading operations and makes available more of the shift time for both time elements.

System of Shooting

Since shooting, to a very large extent, determines the loading capacity of equipment, a great deal of study was given it. The location of holes is shown in sketch 2. Six shots are fired with eight sticks of 1½" x 6" Lump Coal "C" permissible powder. Each rib hole is charged with two sticks and each of the other holes with one stick. The snubbing shot is fired first and it is loaded out before subsequent shots are fired. This shot yields between 3 and 3½ tons of coal. It takes out a space 3 ft. high and as wide as the duckbill shovel. It was found that in order to get maxi-

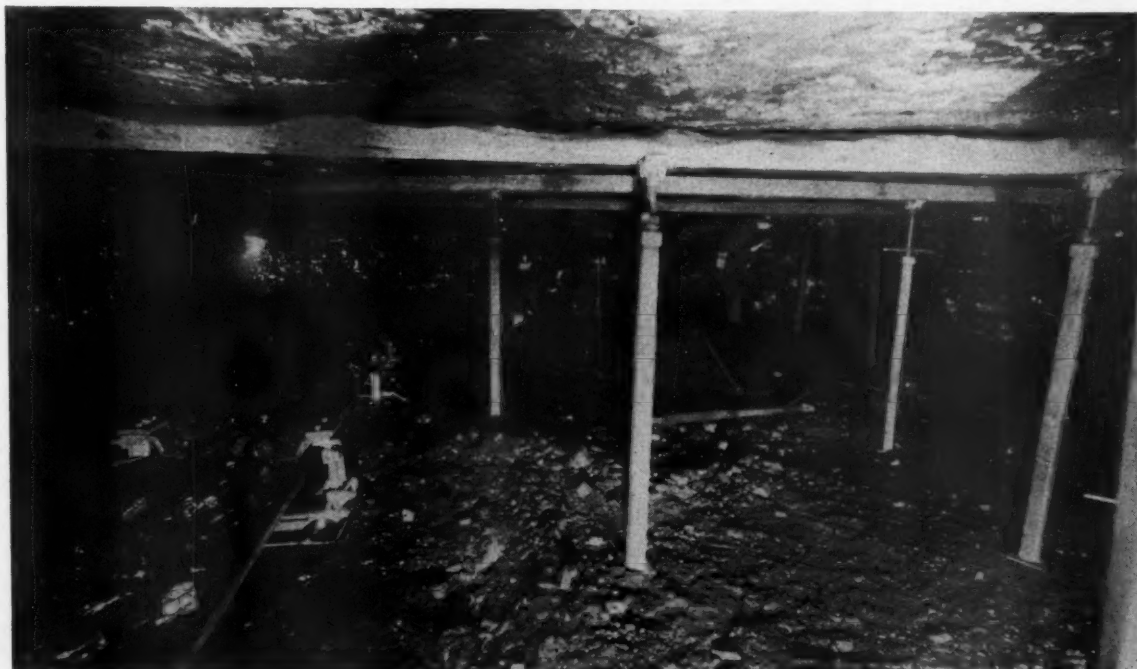


mum size and looseness it was necessary to load the snub shot out all of the way back to the end of the undercut. If this is not done, loading is loose only as far back as the snub shot was loaded and from that point on to the back of the undercut it is tight and loading is slowed down. Creation of the 3' x 4' space gives plenty of relief for the rest of the shots. No realization was lost, because of an increase of small-sized

coal, as is often the case when mechanical loading equipment is installed. Under hand loading, rooms were driven 24 ft. wide and shot with three holes charged with nine sticks of powder. Rooms are now 6 ft. wider and shot with one less stick of powder.

Coordinating Duties of Crew

The work of preparing and loading coal is broken down into jobs. Each

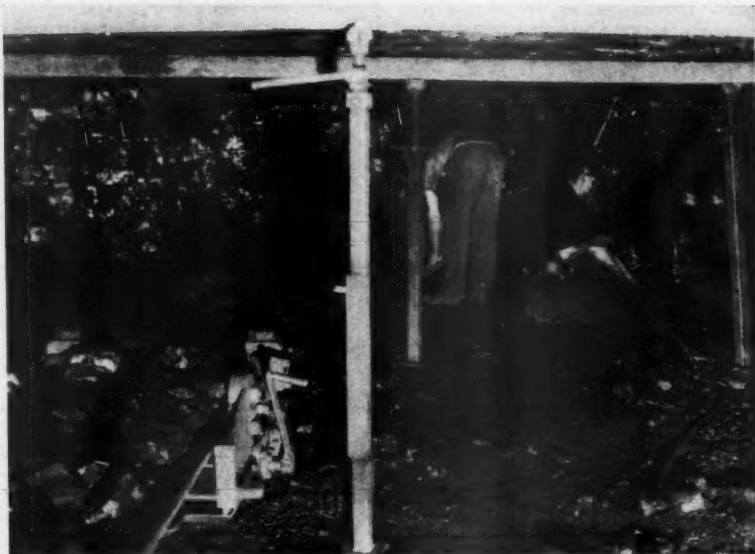


Three jobs take place simultaneously

member of the crew is charged with a definite proportion of these jobs and trained in the correct timing of each job. A typical operating cycle is as follows:

Snubbing shot is fired with all four men in a safe place. They distribute themselves so that both crosscuts and the mouth of the room are guarded to keep anyone from coming into the room while shots are being fired. Loading is started by the duckbill operator and the driller. Timberman works at timbering, machine man changes bits and prepares machine for next cut. After snubbing shot is loaded, all men go back to their respective places of safety. All shots are then fired and the men go back to the same jobs they were on when snubbing shot was being loaded. As soon as 10 to 12 ft. of the right-hand side is cleaned up, the machine man starts cutting. The timberman relieves the driller as assistant to the duckbill operator. The driller starts drilling. He drills both ahead and behind the cutting machine. These positions are held until the loading operation is finished at the left-hand side of the room face. At that point the cutting machine is closely crowding the duckbill.

The timberman and duckbill operator loosen the "C" clamps on the telescopic trough and take down the pendulum jack. The duckbill operator then starts taking the machine cuttings from under the kerf with a long-handled shovel. The timberman takes the timber truck, which runs in the trough line, to the mouth of the room to replenish his supply of timbers. After cutting is finished the machine is pulled to the center of the room and the drag chain hooked onto



The shot has barely loosened the coal from the roof. Note percentage large size coal on duckbill

the duckbill. It is then pulled forward until the leading edge of the shovel rests on a point 12 to 18 in. past the beginning of the previous cut. In this position it can reach the back of the cut from rib to rib. The cutting machine is then parked in the clear along the right-hand side of the room. By this time the driller has finished drilling and tamping the holes. The duckbill operator has also finished bug-dusting the cut.

The whole crew takes down the rear crossbar and takes it to the face. The timberman sets one screw jack near the center. While he is placing

three or four more jacks under the bar, the machine man puts up the pendulum jack while the driller and duckbill operator tighten the "C" clamps on the telescopic trough. When it becomes necessary, the whole crew assists in installing a new trough.

The duties of the car trimmer are to trim cars, help the motorman to switch trips, and to make up powder and fill dummy bags. He delivers these materials to the face. A great deal of study has been given this work cycle in order to determine the proper timing.

On the third shift a three-man supply crew takes timbers to the room neck, and delivers enough troughs and trough supports to the working face to last two shifts. In addition they deliver general mine supplies. A crew of six men on this shift does the moving. Management keeps a close check on room lengths. These six men also load some coal in order to keep rooms at unequal distances so that it is impossible for several duckbill units to require moving on the same shift. Correct use of these men largely confines the moving to the third shift and staggers the work so they never have more than they can take care of on one shift.

Each duckbill unit discharges directly into mine cars of 1.3 tons capacity. The peak output of one crew so far is 130 cars. A continuous room system of mine layout is employed and no trouble has been experienced with the long rooms. They fall in, but the rapidity of face advance keeps the active workings well ahead of the falls.



Drives are elevated on 16-in. timbers

Coal as Related to the Liquid Fuels Industry

Research Marks Coal for Important Future Applications in Improved Heating Units as Well as a Source of Liquid Fuels

By
| By A. W. GAUGER
| and
| C. C. WRIGHT
| School of Mineral Industries
| The Pennsylvania State College

THE SUBJECT of hydrogenation of coal—or better of liquefaction of coal—is indeed today a live subject. We are a nation on wheels and the rationed article most sensitive to public reaction is unquestionably gasoline. It so happens that we have been generously endowed with petroleum, which has been the source of our liquid fuels and lubricants. However, petroleum, like other minerals, is non-replaceable. When once used, it is gone. We have been using this resource at a tremendous rate during the past several decades, but new discoveries and recovery techniques have enabled us to keep the known reserves in step with the withdrawals. True, from time to time we have had scares and threats of shortages, but the fact that the scarcities have never materialized has brought about a certain complacency and a feeling that this is another cry of "Wolf, Wolf."

However, it will be recalled that in the fable the wolf finally did arrive, with disastrous consequences. We are now in the midst of a struggle for our very existence and it behooves us as intelligent citizens to examine the situation carefully, lest the same fate overtake us. Summed up briefly, petroleum technologists are agreed that petroleum is being consumed at an alarming rate and new discoveries are not keeping pace.

The needs for oil under present trends of consumption will require that fifty to sixty billion barrels be found during the next 20 years to maintain present ratios of reserves to consumption. This is as much as has been discovered since the oil industry

was founded, 80 years ago. So much for our needs; what of the present rate of discovery? The alarming feature is that it now requires three times as much drilling to find a new barrel of oil as it did five years ago. In other words, while the annual number of wildcat wells has increased, and the number of discoveries has been greater, the size of the fields and the total amount of oil discovered has averaged less. No one can say with certainty, prior to drilling, where oil will be found, and new discoveries will no doubt be made. However, the probability of finding large new fields is decreasing with each new discovery. The acceleration of use resulting from the wartime needs has hastened the day of reckoning.

Prediction of the future requirements for liquid fuels is hazardous because of the many factors involved. For example, one reads of tremendous expansion of private air travel. This may materialize but hardly over night. As it does there will be a steady increase in demand for motor fuel and lubricants. On the other hand, the efficiency of the present automobile engine is only a fraction of what it might be. Changes in design which might double the mileage per gallon would have a profound effect on the picture. It is highly probable, however, that the demand will not diminish after the country once gets transformed from war to peacetime economy.

The present daily demand of all petroleum products for military and civilian uses is 4,425,000 barrels, of which 1,200,000 barrels are for military purposes. We are thus using up liquid fuels at the rate of over one and one-half billion barrels a year.

This figure represents an increase of approximately 25 percent over the demand for 1940. We may assume that for a time following the close of the war the demand for petroleum will be at least one and one-half billion barrels annually. The first question is, where are we to get this ocean of liquid fuel?

The sources of future liquid fuels are (1) petroleum, (2) oil shale, (3) replaceable raw material such as agricultural products, (4) improved efficiencies of utilization, (5) use of solid fuels in internal-combustion engines, and (6) liquefaction of coal.

To meet this demand, under present conditions of production, refining and utilization, there is in sight about 13 years' supply. During the years just prior to the present war about 38 percent of the domestic crude oil supply was consumed annually as a fuel for other than automotive purposes. Even now the daily consumption for light and heavy fuel oil purposes, including military, heating, industrial and railroad, amounts to almost 37 percent of the total crude demand. It is true that part of this fuel oil is used on ships but a very large percentage is used on land for one purpose or another.

Much of this could, by modern refining practices, be converted into gasoline. The use of this potentially high-grade fuel for such low-grade purposes represents an economic wastage that cannot be justified. Verily, "we are selling our birthright for a mess of pottage!"

Winchester has estimated that there are slightly over ninety-two billion barrels of recoverable oil from the shale reserves of the United States. Only limited experiments have been conducted on oil shale distillation by the Bureau of Mines in this country and the cost has been estimated at from \$1.75 to \$2 per barrel. According to the U. S. Bureau of Mines, the manufacture of gasoline from oil shale is not its best use under present circumstances. Dr. A. E. Dunstan, chief chemist of the Anglo-Iranian Oil Company of London, which operates the Scottish oil-shale industry, states it may be a much more satisfactory raw material for manufacture of Diesel fuels. Nevertheless, the Bureau of Mines estimates, on the basis of present knowledge, that the cost of producing gasoline from oil shale will be about 10 or 11 cents per gallon.

Partial report of an address before the Coal Mining Institute of America, Pittsburgh, Pa., December 9, 1943.

Much study has been and is being made on the use of alcohols or other combustibles from agricultural materials. This, of course, is hardly feasible at the present price of petroleum. However, chemurgy is still in its infancy and it is conceivable that this may become an important future source of liquid fuel.

The efficiency of the present motor vehicle engine is about 15-30 percent. Any new developments which will increase this efficiency will have the net effect of increasing the available supply. This may, however, be offset by a search for new markets by the petroleum industry to prevent any falling off of consumption.

Solid fuels are now being used for motor vehicle propulsion in many parts of the world that have an inadequate supply of gasoline and Diesel fuel. Thus, there are now about one million motor vehicles operated on small gas producers. Furthermore, the Diesel engine was originally designed to operate on powdered coal. However, the abrasiveness of the ash on the pistons and cylinder walls deterred the development of the coal-dust engine. The use of these devices is fraught with so much difficulty that it seems unlikely that they will become an important factor in the United States.

We come now to a consideration of the liquefaction of coal. There are four different methods in commercial operation by which liquid fuels are produced from coal. These are carbonization process, Berginization or direct hydrogenation, the Fischer-Tropsch synthesis from water gas, and extraction hydrogenation.

Since the carbonization process is well known, I shall pass on to the other three.

Bergius Type Hydrogenation Processes

The coal hydrogenation process consists essentially in breaking up the heavy coal molecules and, with the aid of added hydrogen, reforming them into light hydrocarbons similar to those composing petroleum. Additional hydrogen is necessary to the reaction because the ratio of carbon to hydrogen in coal, around 15 or 16 to 1, must be reduced to about 7 to 1, the proportion of carbon to hydrogen in petroleum. The reaction is accomplished as a continuous process by the hydrogenation of bituminous coal, sub-bituminous coal, brown coal or low- and high-temperature tars at pressures in the vicinity of 250 to 275 atmospheres and temperatures of 450° to 500° C. with the aid of catalysts which speed up the reaction.

In the first stage of the process approximately equal proportions of cleaned, pulverized coal and a dispersion agent, which may be tars, heavy petroleum fractions or heavy coal oils from the process itself, are

passed through the reaction chamber in the presence of catalysts and produce liquid products consisting mostly of heavy oil, together with some intermediate oil and gasoline. The gasoline fraction is stripped off, part of the heavy oil is recycled, and the remaining fraction is subjected to a second liquid phase hydrogenation or in some cases it passes directly to a vapor phase hydrogenation-cracking unit for conversion to light oil. If the second liquid phase hydrogenation is used, the products from this stage are subjected to a vapor phase cracking hydrogenation to obtain the final light oil products.

The major product from the Bergius type process is gasoline, the quality of which is unusually high. Gasoline of 70 to 75 octane number may be readily obtained by this process, and this gasoline has a high lead susceptibility and may be leaded to an octane number of 90 to 95. By blending certain fractions of the hydrogenation products, some Diesel oil of reasonably good quality may be obtained with cetane number 52, but the majority of the oils produced by this process and boiling in the Diesel oil range are poor in quality, having a cetane number of 20 to 40. No lubricating oils of satisfactory quality are known to have been made by this process.

The yield of liquid products by the Bergius type process is reported to be between 60 and 65 percent by weight of the coal treated, and the total coal consumption for all purposes, including the coal actually converted, is about 4½ tons per ton of gasoline produced. The latest information indicates that average gasoline yields, in the vicinity of 190 to 200 gallons per ton of dry ash-free coal treated, are now being obtained in the latest type plant.

There are, at the present time, about 20 commercial plants treating bituminous coal, brown coal, lignite, and crude tar oils by the Bergius type process. The German production of gasoline by this process is reliably reported to be in the vicinity of 31,000,000 barrels per year. The British have one plant of commercial size with a capacity of about 1,000,000 barrels per year. This plant normally operates on bituminous coal of quality similar to that obtained from the Pittsburgh seam in the vicinity of Pittsburgh, but at the present time the plant is operating primarily on high- and low-temperature coal tars, in order to increase the output of gasoline for war purposes.

Fischer-Tropsch Type Process

In the Fischer-Tropsch process water-gas made from coal or coke is converted into synthesis gas composed mainly of hydrogen and carbon monoxide in the proportions of 2 to 1. The gas must be free from sulphur

compounds, after which it is passed over suitable catalysts, generally finely divided nickel or cobalt, at substantially atmospheric pressure and at temperatures in the vicinity of 180° to 210° C. The reaction is strongly exothermic and it is necessary to provide suitable cooling for the reaction chamber.

The quality of the gasoline produced directly by this process is quite low, less than 65 octane number, and of low lead susceptibility. By cracking methods common to the petroleum industry, however, it is possible to crack and reform the gasoline fraction to produce satisfactory anti-knock products. The Diesel oil fraction is of a very high grade and is reported to have a cetane number as high as 100 to 120. Because of the very high quality, this material is generally used for blending, since cetane numbers of 50 to 60 are usually satisfactory. In current operation it is reported that the liquid products yield on refining 62 percent gasoline, 26 percent Diesel oil, 10 percent gas, and 2 percent paraffin wax.

According to present information, the yield of liquid products per thousand cubic feet of gas treated is approximately 7.5 lbs., about 1.2 gals. The theoretical yield is 13 lbs. per thousand cubic feet. Using the Fischer-Pichler process (a modification that uses different catalysts and higher pressures), a yield of about 9.4 lbs. per thousand cubic feet has been reported. Assuming that the water-gas is produced from coke and the extra hydrogen produced from the carbon monoxide of the water-gas by the carbon monoxide-steam reaction, these figures indicate a theoretical yield of liquid products of about 110 gals. per ton of coke treated and an actual yield using the Fischer-Tropsch process of about 63 gals. per ton of coke treated. These figures include only the coal converted to synthesis gas and do not include coal used for the production of process steam or power.

As of 1938 Germany was reported to have 14 plants manufacturing synthetic gasoline by the Fischer-Tropsch synthesis, the combined capacity of which was slightly over 7,000,000 bbls. One plant using the Fischer-Pichler process was in operation and had a capacity of 175,000 bbls. per year.

Japan is believed to have in operation two plants of this type with a capacity of 215,000 bbls. per year. Several additional plants were planned, but it is not known whether they have been constructed.

Extraction-Hydrogenation Processes

Certain solvents, such as tetralin, phenols, and various coal-tar fractions, are known to be hydrogen carriers. By extracting the coal with

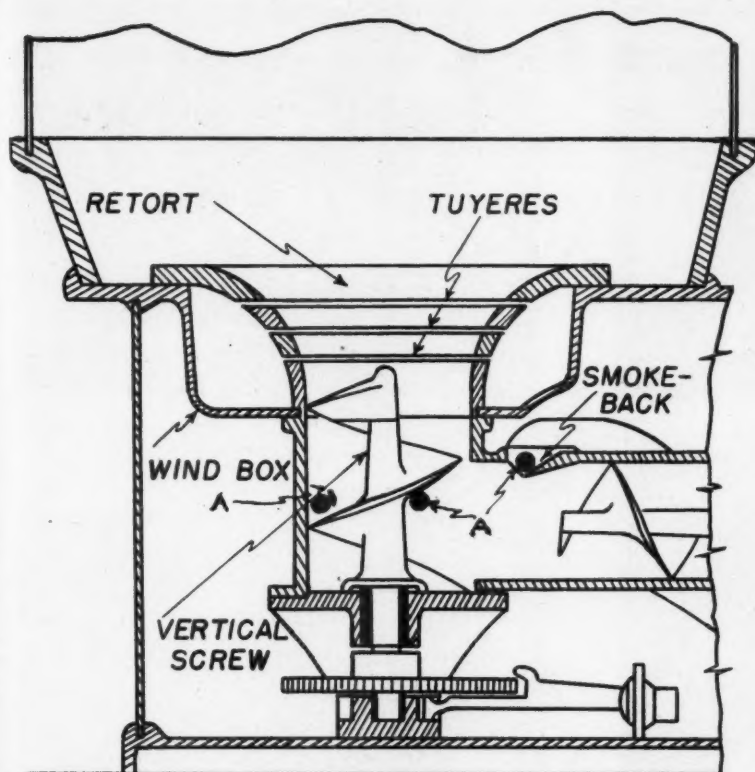


Fig. 1. Retort section of modified stoker. "A" indicates the four preoxidation air ports, each 1 1/4-in. diameter, connected by a manifold to regulate air duct furnished with proportioning damper to distribute total air between primary tyeres and preoxidation air ports

these solvents in the presence of hydrogen, it is possible to secure a conversion of the coal into a soluble material. The yields of extracts can be considerably increased by regulating the temperature so as to exceed the boiling point of the solvent but not to exceed the decomposition temperature of the coal. As the extraction proceeds, the decomposition temperature of the residual coal increases and it is thus possible progressively to increase the temperature of extraction until all extractable material is recovered. The temperature of extraction is reported to range between 300° and 450° C., and sufficient hydrogen is introduced to maintain the hydrogen content of the solvent. This is known as the Pott-Broche process.

The soluble coal may then be hydrogenated by a process which is essentially the same as the second liquid phase stage of the Bergius hydrogenation process. Very little information is available as to the quality of the products obtained from this process but it is believed that the liquid phase hydrogenation products are subjected to a further hydrogenation-cracking to produce high-octane gasoline. The advantage of this process and the Uhde process, which is somewhat similar, lies in the fact

that instead of coal liquefaction by high-pressure hydrogenation in the first stage, which produces a conversion of approximately 60 to 65 percent of the coal, the first stage of the extraction hydrogenation process yields about 80 percent conversion and is conducted under relatively mild conditions of temperature and pressure. In 1938 three plants were in operation in Germany using the Pott-Broche process and had a reported capacity of a little over 350,000 bbls. per year; one plant using the Uhde process was believed to be in operation and had a capacity of 70,000 bbls. per year.

Dr. Fieldner, of the U. S. Bureau of Mines, gave the following cost data in his testimony before the O'Mahoney committee last August:

	Cost of gasoline, cents per gallon
Berginization	22.6
Fischer-Tropsch from coal.....	19.2
Fischer-Tropsch from nat. gas....	8.5 *
High pressure hydrogenation of petroleum	5.5
Refinery, oil 1.20 per bbl.....	5.3
Refinery, oil 2.00 per bbl.....	8.5

* Natural gas at 5 cents per 1,000.

The Federal Government is planning an extensive program of large-scale research on the liquefaction of coal. This is but taking thought for

the morrow and is sound policy if properly carried through. We need a number of small units so that all methods of liquefaction may be investigated, and we need a lot of laboratory experiments seeking to unravel the chemistry of coal. The construction of one or two full-size plants will be sheer nonsense, despite the fact that such plants have been constructed in other parts of the world. Our problems and our coals are different from those of England and Germany, and our scientists and engineers are second to none.

Automatic Domestic Heating with Coal

As far as the coal industry is concerned, I do not see any large immediate demand for liquid fuel from coal. Nevertheless, this industry does have a golden opportunity to contribute and that is by continued improvement of its product and methods of utilization thereof. If coal can take over the fuel-oil load alone, it will have the effect of increasing the reserves tremendously. This can only be done by making it as easy to use coal as it is to use oil and by insuring a continuing supply.

The domestic heating market alone uses 116,000,000 bbls. of oil annually. To get this market, coal needs inexpensive equipment that will do an automatic heating job. The Mineral Industries Experiment Station has been engaged on this problem for the past four years. Our aim is a single unit that will take the energy of coal and convert it into hot water the year around; cooling and dehumidification in the summer and heating and humidification in the winter. We are still a long way from our goal but we have developed a stoker which is more nearly automatic than any now on the market. The design of this stoker represents an interesting application of fundamental chemical principles and scientific knowledge of the behavior of coal.

The combustion of coal involves a number of chemical reactions. It is well known that chemical reactions can only occur when the reacting bodies are in contact with each other. It is relatively easy to obtain such contact between the reacting bodies in the case of liquids or gases but is more difficult in the case of reactions between gases and solids which are characteristic of combustion.

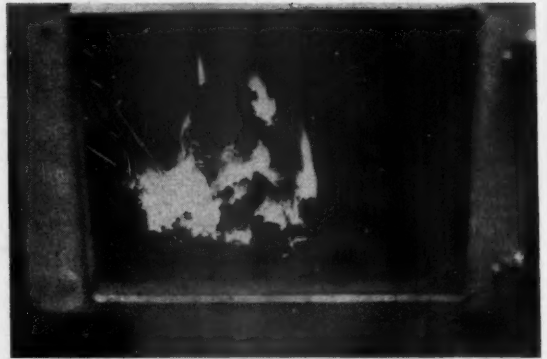
In order, therefore, to have good reaction between a solid fuel and the oxygen of air it is essential to obtain satisfactory mixing so that the oxygen of the air may come into contact with as large a surface of the solid fuel as is possible.

Furthermore, coal technologists have long known that coal can be oxidized at low temperatures although the reaction rate is relatively

Fig. 2. Fuel beds in stoker "A." Lower Kittanning Seam Coal



A—Stoker "on." Operation consisted of 1 hour continuous followed by 20 minutes hold-fire and then 20 minutes "on." Preoxidizing air used. Fifteen percent CO₂—960 deg. F.



B—Taken 5 minutes after picture A. Stoker "off." Eight percent CO₂—stack temperature falling



C—"Off" period shown in picture B lasted for 33 minutes after which time stoker was started without preoxidizing air. Picture C taken after 28 minutes continuous operation. Two percent CO₂—500 deg. F. stack



D—Taken after 39-minute continuous operation (11 minutes after picture C) without preoxidizing air. Note rapid formation of coke tree. Three percent CO₂—450 deg. F. stack

slow. Such oxidation, which is a surface phenomenon, will greatly modify the properties of coal. It is known, for example, that coal obtained from pillars or from outcroppings where it has been exposed to air over a long period of time has lost much, if not all, of its coking characteristics. It is also known that this oxidation of the coal to destroy the coking characteristics can be speeded up by increasing the temperature while still remaining below the temperature at which coal ignites. One of the problems involved in the use of heavily coking bituminous coals in domestic stokers has been the formation of a coke tree which will grow and fill up the furnace volume and in general cause inefficient combustion. Unless this coke tree is broken up periodically not only will the combustion be inefficient but the fire may also be put out. This is particularly true during the hold-fire periods.

It remained for Messrs. Wright and Spicer, of the Mineral Industries Experiment Station, to apply these principles and this knowledge in the

development of a new domestic stoker. These two gentlemen reasoned that it should be possible to oxidize the coal sufficiently within the appliance so as to modify its coking properties in order to eliminate the coke tree formation. After much experimentation they arrived at a design which provides for introduction of air well below the zone of active combustion. This air is thoroughly mixed with coal as it is fed upward into the stoker so that when the zone of active combustion is reached large coke trees are no longer formed. On the other hand, small friable lumps of coke are formed and the result is an open fuel bed which is alive over its entire surface. Under these conditions the combustion is highly efficient, the carbon dioxide content of the stack gas rising as high as 14 percent.

Because of improved fuel-bed conditions resulting from elimination of coke trees, it is possible to operate the stoker at remarkably low hold-fire rates without danger of having the fire go out. New controls for

hold-fire rates as low as $\frac{1}{2}$ lb. per hour are now being developed by an independent manufacturer for use with the new stoker and will insure satisfactory maintenance of the fire without any possibility of overheating the home even during summer operation when the unit may be used for the heating of domestic service water.

Figure 1 shows the retort section of the modified stoker and Figure 2 shows fuel bed operation with and without the "preoxidizing" air.

Experiments are now under way applying the same preoxidizing principle to single retort light industrial stokers. The investigation is still in the preliminary stage but results to date have been quite promising.

In conclusion, the authors repeat that the coal industry and equipment manufacturers can contribute very much to the relief of the motor fuel situation by developing efficient, economical and automatic equipment to produce heat and power and thus return fuel oil to utilization as a source of motor fuel.



Full and substantial employment is depicted in the above scene at the Anaconda Copper Mining Company's Leonard Mine at Butte, Mont.

Make America Prosperous First

WITHOUT indulging in any preliminaries, it must be clear first that we in the United States, with perhaps 7 percent of the population and natural resources of the world, can not feed, clothe and otherwise provide for the two billion people of the world, and second, that we can not make the world prosperous by handing out \$10 in gold to every person in the world (\$20,000,000,000 in gold), any more than John D. Rockefeller could make America prosperous by handing out 10-cent pieces to little children as he passed them on the street.

We must therefore examine how we may proceed in order to make the greatest possible contribution toward the building of a prosperous and happy world. Obviously, it is absolutely necessary first to adopt the principles of abundance rather than scarcity. Second, it is equally necessary to adopt the principles of balanced budgets as distinct from deficit financing. Third, it is necessary to adopt the principles of a sound system of taxes as well as sound principles in money and banking. And finally, it is necessary to make sure that there is opportunity for sub-

International trade, reciprocal trade agreements and tariffs as related to the problem of postwar prosperity, large national income and full employment.

By DR. JOHN LEE COULTER

Economist
Washington, D. C.

stantially full employment for all persons everywhere who wish to produce goods or render other useful service.

But how are these things to be brought about? Certain it is that if we in the United States practice principles of scarcity, of deficit financing, of Government subsidies and other policies which contemplate millions of unemployed, and if we continue to pile up world stocks of precious metals and bury them in holes in the ground we shall not set a good example to the rest of the world, nor can we with any degree of assurance hope to go out and make the rest of the world prosperous.

Prosperity, like charity, must begin at home. If as a result of sound policies in the United States we are able to make this country again the

most highly prosperous nation in the world, then indeed by precept and example and well-considered cooperation we may be able to contribute tremendously toward world prosperity. I shall therefore devote the remainder of this talk to a discussion of how we may, to best advantage, make and keep America prosperous.

Without further reference to the general problem, I propose to limit my discussion to the prosperity of these western states of which Denver, Colo., is near the center. But I propose to further limit myself largely to a discussion of the problem of prosperity in the mining industry in this region, leaving problems of agriculture, forestry, fishing, manufacturing, transportation, etc., for consideration in some other connection. For if the mining industry of this great western

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**National Prosperity is Dependent
Upon Bountiful Supplies of Important
Mine Products**



region is prosperous and fits into the general scheme of the nation, then the nation as a whole may hope to be prosperous.

The nation as a whole can not hope to be prosperous if any great region, such as this western area, or if any great industry, such as the mining industry, is other than prosperous. And prosperity in this western region must include the fullest possible opportunity to utilize the natural resources with which this region is endowed and to provide the fullest possible employment for the great mass of working people. In other words, no scheme of keeping the natural resources stored in mother earth (scarcity), and no scheme of maintaining the unemployed on Government money (subsidies or made-work), and no scheme of feeding the outside world or distributing gold will make this nation prosperous.

In passing, I have been impressed with the fact that in 1940 (just at the beginning of World War II), when there were 45,000,000 persons gainfully employed in the United States, 9,000,000 of these, or one-fifth of the total, were employed in the 17 western states of this nation. With 50,000,000 gainfully employed, this region should have 10,000,000, and if the grand total of available labor in the United States should reach 55,000,000 during the post-war years, then this western section of the United States should find employment for not less than 11,000,000 workers. And this can only be done if the mining industry of this western region is given opportunity to oper-

ate on the most complete and profitable basis.

The Mining Industry

Without getting too statistical, perhaps I should note in passing that, just before the great world depression, mineral production in the United States (which of course included coal mining, petroleum and the iron and steel industry, as well as other branches of mineral production) was valued at slightly more than \$5,000,000,000 annually. And mineral production in these 17 western states accounted for almost one-half of this, or about two and one-half billion dollars. By 1932 production for the nation had fallen more than 50 percent or below two and one-half billion dollars, and production in these western states had likewise fallen more than 50 percent, or below one and one-quarter billion dollars. However, these western states still contributed almost 50 percent of the total. By 1939 the nation's mineral production was back up to slightly more than four billion dollars and these western states contributed slightly more than two billion dollars, or 49.1 percent of the total. What I want to impress upon you and the people of the nation is that this western region, with 20 percent of the nation's population and working force, contributes an average of 50 percent of the mineral products of the country, both in periods of prosperity and depression.

While I personally am always disposed to support every contention by citing detailed statistical or mathematical proof, I realize that in a pub-

lic address it is very difficult to include too many figures. However, all of the facts or figures are in the public documents and are readily available to all of us. I shall not therefore, in the remaining discussion, attempt to recite in detail the exact number of men employed in the production of minerals in these western states, or in the nation, more than to say that when employment is given to a million or more persons an industry is one of perfectly tremendous importance. Nor shall I attempt to develop in detail the relative importance of such minerals as copper, lead, zinc, silver, mercury, molybdenum and other minerals for which this western country is particularly noted. If I should attempt this it would be necessary to go into the details of petroleum, natural gas, and the other non-metallic products, as well as into the problems of coal production, iron ore, etc. I think it is enough here merely to stress the fact that the nation as a whole depends upon this western area for a long list of the most important critical and strategic mineral products. *From the standpoint of national defense, the nation as a whole would indeed have been in a sorry position during the critical years, both of war and of peace, without the products of this western area.* This region has and must continue to contribute these valuable mineral products—if the nation is to prosper—and if the world is to prosper.

I think I may say dogmatically and without fear of successful denial that our national prosperity, certainly during the next 10 or 25 years, will continue to be largely dependent upon bountiful supplies of the important mineral products available in this western region. Furthermore, national prosperity will depend upon the success we have in providing gainful employment for ten or eleven million people in these western states. In other words, we do have the natural resources and we do have the people, and if we are to have national prosperity we must have prosperity in this great western region.

Our modern civilization is largely built up around the use of mineral products which, supplementing our foods and fibers, have done the most to make America great. It is con-

ceivable, of course, that in years to come new metals will be found, new uses will be found, synthetic products will develop, plastics will have their place, and the lighter metals (aluminum, magnesium, etc.) will be developed on a vastly greater scale than a decade ago. But in spite of all these constant changes, we may rest assured that there still is and will continue to be a tremendous place in our modern civilization for the copper, the lead, the zinc, the mercury, the molybdenum and the score of other mineral products known to exist and to be available for development in this western area.

Now, however, we come to perhaps the most outstanding special or difficult problem which will confront us.

Shall we utilize our own natural resources, give employment to our own people and supply the products needed in a prosperous nation?

Or

Shall we depend upon the great deposits known to exist in other parts of the world, give employment to millions of less well paid workers in other parts of the world, and import the mineral products needed to continue the development of our own nation?

I need not here recite the well-known fact that (1) mineral deposits of a wide range and character are scattered over the entire face of the earth and under the earth's surface as well as in the waters of the seas, or (2) that among the 2,000,000,000 people scattered over the earth's surface there are literally hundreds of millions who may be exploited, and, in order to get a bare subsistence, may be willing to work at wages so low as to make competition on the part of our own people substantially impossible. These two broad, general propositions are known to all.

But will the users of mineral products in the United States want to go to other parts of the world for their mineral products and continue to exploit the poor and ignorant people of other parts of the world on the theory that by so doing we may temporarily be able to secure some or many of the mineral products available in these western states at a slightly lower price? Or will the consumers of this nation as a whole realize that by so doing our own natural resources will be abandoned, our mines closed, and millions of our people left unemployed? If this should be the judgment of the American people, then they must be prepared through taxes (and with a bankrupt Government) to support literally millions of unemployed, and a region containing 20 percent of the nation's population can not be prosperous and the nation as a whole can not be prosperous.

My philosophy is that the nation must stand or fall as a unit. The nation as a whole and all of its major

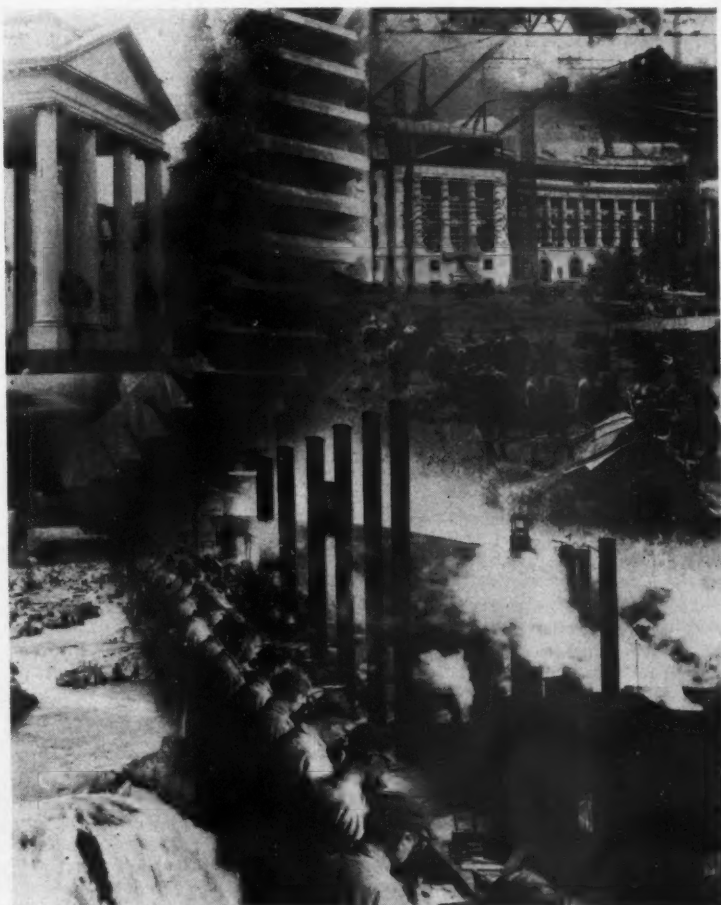
regions must be prosperous or the prosperity of the nation as a whole will be dragged down to lower and lower levels because of failure to pursue policies intended to promote prosperity in all areas.

It will be argued by some that the consuming public should be provided with all essential materials, including mineral products, at the lowest possible price that can be secured any place in the world. In other words, it will be argued that if the cost of production in the United States for any group of products, such as minerals, is slightly higher than in other parts of the world, the consumers must be protected even if they must be provided with products from other parts of the world at a slightly lower price. At this point it should be stressed that at all times the consumers are being protected by the progress of American industry, which includes the activities in the mining regions. Constantly, substitutes are being developed whenever this can be done at a slightly lower price. Constantly new mineral products, plastics and other materials are being developed where these can be pro-

duced at attractive price levels. Altogether, all of the benefits coming from our great industrial system have ultimately redounded to the benefit of the consumers of the nation. The consumers of no other country on the face of the earth have been given so much, at such fair price levels, when account is taken of the fact that the consumers of the United States are themselves also the producers. The 20,000,000 people living in these western states are likewise the consumers of products from the eastern states. If, as producers, they are not encouraged to develop the resources which we have at home, then as consumers 20 percent of the domestic market will be unprofitable.

Reciprocal Trade Agreements and the Tariff

During the past decade there has been a theory much in vogue in this country to the effect that the United States, through its system of customs duties and excise taxes on imports, has obstructed the flow of trade and that we have set up barriers which have interfered with the greatest possible volume of international com-



The nation as a whole must be prosperous

merce. As a result of that theory, the Government has undertaken policies, especially in the negotiation of reciprocal trade agreements, which have not yet brought perceptible benefits to the people of this country but which have in fact resulted in grave injury. We have all had the highest possible regard for and have given almost universal approval to the diplomatic activities of the State Department in their relationship with other countries of the world. But each year it has become more obvious that when that department has launched out into the field of control and manipulation of the economic life of our own people and the people of other parts of the world, they have constantly sacrificed American interests *in favor of the theory of an increased volume of international trade.*

Mere volume of trade is not necessarily economic. A box of strawberries may be carried around the world or may be sold 10 times from the farmer's berry patch to the ultimate consumer without increasing volume of food or the food value of the box of strawberries to the ultimate consumer. The volume of trade may have been tremendous but the product may have deteriorated with each succeeding sale. *Mere volume is not an intelligent goal.* This becomes particularly manifest when, by importing commodities which can be produced at home, our own resources are left undeveloped and our own people are left either unemployed or forced to wage levels comparable with foreign groups in order to survive.

In this connection, I think it is proper to point out that the United States already is one of the three or four leading countries in international trade. The so-called barriers have not kept us out of desirable, sound, economic international trade. This country has by far the largest volume of imports free of duty of any nation in the world.

The customs duties and excise taxes imposed upon certain imports into the United States average lower than the rates imposed by practically all of the leading nations of the world.

The nations of the world during peace times collect a total of about \$5,000,000,000 in customs duties. We, with about 7 percent of the world's population, collect about 7 percent of the \$5,000,000,000, or \$350,000,000, indicating that our selective system of a large volume of free imports and special duties or taxes on selected imports is in complete harmony with the general policy pursued by the approximately 100 nations which

exist among the 2,000,000,000 people of the world.

In conclusion, I think that we must commence systematically to think in terms of the enduring peace which we all ardently hope may follow complete victory which we believe to be in sight. The world economic structure will be in a state of chaos. A score or more countries must perhaps pass through a decade or more of insolvency, yet we in this country, if we maintain an intelligent balance, may continue a period of great national prosperity, and in that way we should be able to contribute most to general world prosperity.

The average rate of customs duties collected to foreign invoice value of all imports was 17.75 percent during the year 1931 (the first full year after the Tariff Act of 1930). By 1940 (after five years of reductions under the operation of the Reciprocal Trade Agreements) it was down to only 12.21 percent—a reduction of over 30 percent in average rate of duty on all imports combined. Actually most reductions on about 1,000 commodities were from 40 percent to 50 percent. In fact, by 1940 the average of all rates of duty was down to the levels provided in the Underwood Act of 1913, which brought average rates down to 12.49 percent. This is lower than the prevailing rates maintained throughout the world for the great volume of all world trade. Thus in the countries of the British Empire the average is about 21.7 percent; the average for European countries is about 15.5 percent; and the average for Latin American

countries is about 28.1 percent. And all of these rates are based upon landed cost or its equivalent, while ours is based upon foreign invoice values.

I am not disposed to argue that all customs duties and excise taxes now existing in this or in any country are the final word of perfection. As we move forward there undoubtedly will be desirable adjustments to be made. It may be that during the decade of confusion following the war we might better develop a program of foreign exchange control or quotas governing imports, depending less upon customs duties or excise taxes. The important outstanding, definite, and final test must be: How can we best provide for the national defense, and avoid exploitation by foreign groups, once we are no longer able to provide for ourselves; how can we best utilize our own natural resources; and how can we be sure to give full and complete employment to all of our people?

It is my definite judgment that the members of the American Mining Congress and you of this western region should concentrate upon this most difficult problem, and having developed a strong, sound economic program, this program should be so convincing that the people of the nation as a whole will adopt it and thank you not only for contributing the mineral products but for contributing a large segment of prosperity and full employment, which is absolutely necessary if the nation as a whole hopes to be prosperous and hopes for complete employment for all the people of the nation.



Coal Mine Safety Receives New Impetus

Comments on the formation of committee to conserve manpower in the coal mining industry by preventing accidents

OUR GOVERNMENT, early in 1942, became very much concerned when confronted with the fact that in 1941 this country's death rate from accidents totaled 101,513, and its non-fatal injuries 9,000,000.

Realizing that manpower to meet the demand of our armed forces would have to be conserved to the fullest extent, the National Safety Council, a non-profit organization, was called in by President Roosevelt and asked to put on a nation-wide safety campaign to awaken the country to the realization of the terrible and wholly unnecessary loss of life and limb from accidents.

To secure the funds to finance this nation-wide work, the President of the United States appointed a committee, headed by Mr. W. A. Irvin, former United States Steel Corporation president, to canvass the nation and raise some \$5,000,000 to be spent only for expenses in connection with the campaign. It is my understanding that pledges were received for only half this amount, or \$2,500,000, but the campaign was put under way.

When I was asked by Mr. Irvin; Col. John Stilwell, president of the National Safety Council; and Mr. Ned H. Dearborn, its executive vice president, to assist in organizing a safety campaign in the coal mining industry of the country, I informed these gentlemen that up to that time my experience with the work of the Council, as it applied to coal mining, had not been very satisfactory; that the coal mining industry was very safety-conscious and had been for some time well organized for safety work. I told them of the constant preaching of the religion of safety by its mining institutes, safety units, first-aid organizations, and of how, in my opinion, the statistics and posters theretofore supplied by the Council were unsatisfactory for the coal mining industry. However, I agreed to consult with some of the industry's representative safety men on the matter.

Colonel Stilwell and Mr. Dearborn

Presented before the Pittsburgh Coal Mining Institute, Pittsburgh, Pa., October 29, 1943.

both agreed that the Council would make such changes in their form of organization, statistics tables, and type of posters as the coal mining industry would recommend.

Following this discussion, a meeting was called and a number of representative men met with me in the William Penn Hotel, in Pittsburgh.

At that meeting the Council's proposition was thoroughly discussed and a committee was appointed to make certain recommendations to them regarding revision of practices and character or set-up of organization, so as to carry the campaign to the workers engaged in mining coal, as well as the owners of the mines. And it was agreed at that meeting that unless we secured the complete co-operation of the United Mine Workers of America, and their collaboration in the campaign, no real progress could be accomplished.

This committee reported at a later meeting, held in the William Penn Hotel, which Mr. Dearborn attended, and the following recommendations were made:

1. That a committee to direct this campaign in a national way be appointed. The committee to represent the mine inspectors of the various coal-producing states, the employers, the United Mine Workers of America, and the National Bureau of Mines.
2. That the plan of organization be to have the director of mines of each state, or the chief mine inspector (or whatever the title of the directing head of the mine inspection service may be) appoint a committee, which would be equally balanced between operators, mine inspectors, miners' union, and the National Bureau of Mines, to direct the campaign in their various states. And each individual mine inspector appoint a similar committee of at least one operator, one miners' union representative (or as many more as they wish as long as the committee is equally balanced), and a member of the Bureau of Mines. And in each mine inspection district (which according to our information number 181) the committee be representative of the entire mine inspection district, and that from this point



By THOMAS MOSES

Chairman, Coal Mining Section
National Safety Council

efforts be made to install a similar committee of management, workers, and inspectors for the working out of a practical, comprehensive safety campaign in each mine.

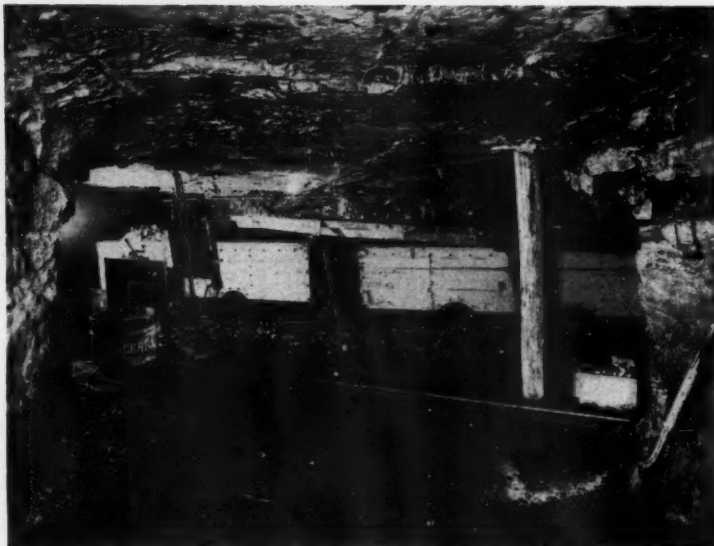
3. That we carefully avoid crossing swords on all controversial subjects. Industrial relations, politics and other subjects to be left to the various interests engaged in those works.

It was agreed that the National Safety Council could not pay, from the money allotted to it, any salaries, speakers' fees, entertainment or refreshments bills, etc., but could manage to pay for posters, statistical information, and other essentials. All bills are to be presented through the national committee and approved by them before they are paid.

It was also agreed to issue a call for a national meeting of the mine inspectors of the United States, to take place the day following the thirty-fourth annual convention of the Mine Inspectors' Institute of America, in Columbus, Ohio, and a meeting was held on May 26, 1943, in the Deshler-Wallick Hotel. Every coal-mining state in the Union was represented at that gathering, either by a director of mines or some one representing him.

Our plan was unanimously endorsed at that time, and the following elections were made: Thomas Moses, chairman; George W. Grove, representative of the U. S. Bureau of Mines; P. A. Grady, representative of the Mine Inspectors of America; R. H. Nicholas, representative of the operators.

Prior to the meeting of May 26 we had written to the International Mine Workers of America, asking them to join us, through some representation. Mr. John Owens, president of United Mine Workers' District No. 6, and Maj. Percy Tetlow, of the international office, came to the meeting. On May 25 they gave us a half



The successful coal mine safety program calls for neatness, orderliness and active cooperation of all concerned

day of their time, when we outlined to them our objectives and the reasons for our meeting.

As you all well know, the coal industry was somewhat disturbed at that time, and even today is having its troubles.

Later we were advised by Mr. John L. Lewis, national president of the United Mine Workers of America, that he had appointed Dr. Walter N. Polakov to represent the United Mine Workers on our committee.

Our next move was to ask the National Safety Council to divorce the coal mining industry from their general mining section, which then included such minerals as iron ore, copper, gold, silver, tungsten, etc., and at the national meeting of the Council in Chicago on October 6 this was done. It was at that meeting that I had the honor of being elected general chairman of the Coal Mining Section of the National Safety Council and also a sectional executive committeeman for 1943-44.

The executive committee of our Coal Mining Section is as follows: Vice chairman, John T. Ryan, Jr.; secretary, R. H. Nicholas; labor representative, Dr. Walter N. Polakov; mine operators' representative (bituminous), John E. Jones and (anthracite) Edgar C. Weichel; mine inspectors' representative, C. L. Lutton; Bureau of Mines' representative, J. J. Forbes, with George W. Grove as alternate; news letter editor, E. H. Denny; engineering committee chairman, A. D. Sisk; entertainment committee chairman, John T. Ryan, Jr.; film strip committee chairman, Robert M. Medill; membership committee chairman, Cadwallader Evans, Jr.; poster committee chairman, Richard

T. McAllister; program committee chairman, J. J. Forbes.

Provisions have been made whereby any unit now organized for the promotion of safety in the coal mining industry, whether it be first-aid organization, miners' local union, Coal Mining Institute, or safety organization, can obtain membership for their entire unit at a cost of \$20 a year, and take part and be eligible for representation at our future meetings.

It is not the intention of our organization to disturb in any manner any organization now in existence or to take away any of its functions. Our principal objective is to assist, through a general organization, all efforts of the mine inspectors of this country, whose duty it is to advance safety practices in the mining of coal. And it is our fervent hope that through our efforts the coal mining industry will acquire a voice that will be heard, respected, carry weight—NATIONALLY.

I have been associated with the mine inspectors of our country for a great many years and feel that I know their work. There are no men in the world more anxious to improve the accident record of each coal-mining district. Brave, intelligent men who have studied hard to know the hazardous business of mining coal.

It is believed that by harnessing the operator, management, miner, inspector and safety engineer into a harmoniously pulling team the hazards now confronting those engaged in mining coal can be greatly minimized. But the success of the plan depends on the willingness of each inspector to avail himself of the assistance our organization offers him.

There is one state which has made

rapid progress in carrying out the organization procedure of the plan and which promises great success. In the great state of Illinois, the director of mines issued invitations to a dinner meeting to the various coal operators' organizations and individual coal operators, the United Mine Workers, the Progressive Miners' Union, and mine inspectors. The affair was well attended and the plan unanimously endorsed. A representative of the mine inspectors of every inspection district of the state was present and all promised to support the plan. The operators did likewise. And the mine inspectors are now holding their district meetings. One of these I attended. The group was very enthusiastic and the district was promptly organized.

The National Safety Council has earmarked \$30,000 of the fund collected for our use. A committee has been appointed to collaborate with the artists of the Council to develop suitable posters for the coal mining industry. Units such as I have referred to above will receive from the Council a limited supply of these posters, statistics, etc., which will be sent to members. Additional copies of all literature and posters can be purchased at a very nominal cost.

The United Mine Workers of America, through its representatives, has shown an enthusiastic interest in this campaign; Dr. Polakov, especially, has offered us valuable assistance. Now we solicit your fullest cooperation in a desperately needed service to your fellow men and your country.

Your national committee authorizes me to say that wherever we can serve in helping to make this life-and-limb-saving campaign successful throughout the entire coal mining industry, you can be assured we will be only too willing to do so.

DON'T BE AN ACCIDENTEE!

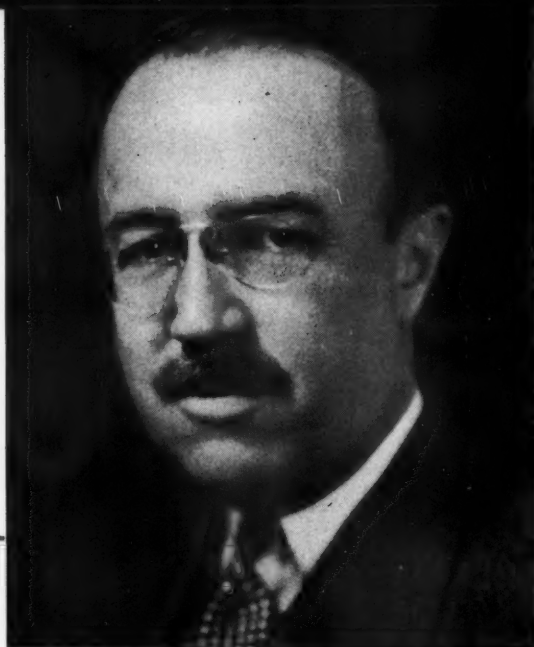


COAL MINE *War* CONFERENCE



THE AMERICAN MINING CONGRESS

Netherland Plaza Hotel
May 1-2, 1944
CINCINNATI, OHIO



CHARLES DORRANCE

President, West Virginia Coal & Coke Corp.
National Chairman, Program Committee

THE one most vital material—bar none—on which our country's war effort is dependent is COAL. Tanks, ships, guns, fighter or bomber planes can neither be made nor transported into action zones without COAL as the basic ingredient. Nor can the fighting men to man them be put in position to do so without COAL. The splendid performance of the American railroads, with diesels, would have utterly failed—with COAL it has been triumphant.

In 1943, the COAL industry, in spite of all the troubles which throughout the year beset it, surpassed the record production of 1942. In 1944, with the strain on transportation facilities, the ever-increasing loss of manpower, the difficulty of obtaining mining equipment, supplies and repair parts, and the exhaustion of underground developed reserves, it will take a mighty and sustained effort on the part of mine workers and mine officials to meet the vital war needs of our country.

This Coal Mine War Conference of the American Mining Congress in Cincinnati is being held primarily so that we in the COAL industry may plan and discuss just how we can carry out the job that faces us today. A fine lot of operating men have given of their time and thought to prepare papers and discussions on the problems that confront us all. I ask in their name and that of the Program Committee which has so faithfully done its job that the executive, operating and purchasing personnel of the industry and their affiliated equipment manufacturing friends arrange to send a full representation to Cincinnati on the first of May. The Chairman of the War Production Board, Mr. Donald Nelson, will be there to tell us what he thinks of us.

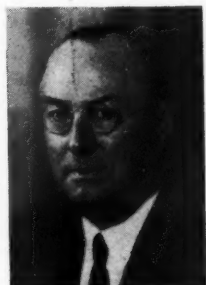
Charles Dorrance



THE 21st ANNUAL COAL CONVENTION MOBILIZES ALL-OUT DRIVE TOWARD

Top Pace Production MAY 1 and 2 at Cincinnati

LEADERS of the coal mining industry will lift their heads from the "grindstone" of worry over their own individual problems and join together at Cincinnati on May 1 and 2 for another annual stock-taking of the important operating and economic difficulties of coal mining. The occasion will be the 1944 Coal Mine War Conference of the American Mining Congress.



DONALD M. NELSON
Guest Speaker, Annual Dinner

100,000,000 tons of bituminous and 50,000,000 tons of anthracite production a year. The railroads are in the picture, burning over 100,000,000 tons annually, and will continue an extensive demand. Our home front activities would be anemic and weak indeed without our coal-fed railroad arteries. Iron and steel and public utilities, supplying countless civilian and war-industry needs, cry ceaselessly for more coal, with prospects good that requirements in this field can and will increase. General manufacturing and materials processing require that a sizable share of the avalanche of coal be diverted their way. All this, plus a steadily growing export demand for the needs of our Allies, brings the total to figures bearing no parallel in all history.

Even though the industry performed an almost herculean task in breaking all production records last year, the demand for coal continues to rise and the goal set for 1944 is 685,000,000 tons. While research staffs toil endlessly to bring about economic improvements in the use and application of coal, little relief from the pressure for capacity production is in sight until after a fully applied war effort has operated to completely smash the Axis. Even beyond that day to which we look forward so eagerly, it is anticipated that



BRIG. GEN. H. F. SAFFORD
Luncheon Speaker

new uses for coal and the expanded requirements for the liquid fuels available will bring about a continued heavy coal production beyond all past peacetime requirements.

Domestic and space heating requirements are gigantic in themselves, requiring something over

Coal is the best bet for the fuel of the future and its operations and difficulties today should be looked upon with this in mind. All too often in recent months the perplexing situations confronting the coal men have closely approached the dilemma stage, and while in the final analysis they may not turn out to be too complex, they do require a lot of idea-swapping and mutual assistance. That's the fundamental idea behind the annual trek of executives, engineers, supervisory officials and key operating men to Cincinnati. This free exchange of ideas and operating information

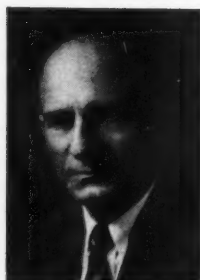


C. J. POTTER
Luncheon Speaker





CHARLES B. BATON
Geo. S. Baton & Co.
PENNSYLVANIA



W. L. DOOLITTLE
Consolidation Coal Co.
WEST VIRGINIA



State Chairmen . . .



F. S. PFAHLER
Superior Coal Co.
ILLINOIS



P. L. DONIE
Mariah Hill Super Block
Coal Co.
INDIANA



L. J. LORMS
Lorain Coal & Dock Co.
OHIO



J. F. BRYSON
Harlan County Coal Operators'
Association
KENTUCKY



H. W. MEADOR
Stonega Coke & Coal Co.
VIRGINIA

Program Committee . . .

PENNSYLVANIA

W. L. AFFELDER
Hillman Coal & Coke Co.
E. B. AGE
Buckeye Coal Co.
NEWELL G. ALFORD
Construction Engineer
S. M. CASSIDY
Weirton Coal Co.
F. B. DUNBAR
Mather Collieries
M. A. EVANS
Koppers Coal Division
W. C. FAN COURT
Bird Coal Co.
HENRY F. HEBLEY
Pittsburgh Coal Co.
T. F. MCCARTHY
N. Y. Central R.R. Co.
R. G. PFAHLER
The Berwind-White Coal Mining
Co.
H. C. ROSE
Pittsburgh Coal Co.
G. A. SHOEMAKER
Union Collieries Co.
GEORGE L. SMITH
Rochester & Pittsburgh Coal Co.
GEO. C. TREVORROW
Duquesne Light Co.

WEST VIRGINIA

W. W. BEDDOW
Logan County Coal Corp.
S. D. BRADY, JR.
Consulting Engineer
CHARLES W. CONNOR
Colcord Coal Co.
J. R. FIELDS
Guyan Eagle Coal Co.
T. W. GUY
Consulting Engineer
C. R. HUFFMAN
Monongahela West Penn Public
Service Co.
PAUL ALLEN HORNER
Maureen Coal Co.
W. E. E. KEEPLER
Pocahontas Operators Assn.
R. C. LUTHER
Peerless Coal & Coke Co.
E. L. MICHIE
Riverton Coal Co.
R. H. MORRIS
Gauley Mountain Coal Co.
JOSEPH PURSGLOVE, JR.
Pursglove Coal Mining Co.
O. G. SCHWANT
Hutchinson Coal Co.
VELEAIR C. SMITH
Consultant
J. C. SNYDER
United Pocahontas Coal Co.

VAN B. SMITH
Anchor Coal Co.
G. J. STOLLINGS
Mallory Coal Co.
T. R. WORKMAN
West Virginia Coal & Coke Corp.

OHIO

JAMES HYSLOP
Hanna Coal Co.
A. J. RUFFINI
Powhatan Mining Co.
F. G. SMITH
Sunday Creek Coal Co.
JOHN T. SYDNOR
Rail & River Coal Co.
WHITNEY WARNER, JR.
Warner Collieries Co.
J. W. WOOMER
J. W. Woomer & Associates

ILLINOIS

J. K. DERING
Dering Coal Co.
J. S. FORMAN
Mt. Olive & Staunton Coal Co.
CARL T. HAYDEN
Sahara Coal Co.

E. R. KEELER
Franklin County Coal Corp.

T. J. THOMAS
Valier Coal Co.

H. A. TREADWELL
Chicago, Wilmington & Franklin
Coal Co.

L. A. WASSON
Wasson Coal Co.

INDIANA

WM. CUNNINGHAM
Linton-Summit Coal Co.
A. K. HERT
Snow Hill Coal Corp.
EARL OLIPHANT
Standard Coal Co.
HENRY P. SMITH
Princeton Mining Co.

KENTUCKY

HUGH BUFORD
Knott Coal Corp.
C. PREWITT GUM
Wisconsin Coal Corp.
W. H. KINGTON
Sixth Vein Mining Co.





C. E. BUTT
Alabama Power Co.
ALABAMA



EVAN EVANS, JR.
Lehigh Navigation Coal Co.
ANTHRACITE



ALEX GRANT
Rocky Mountain Fuel Co.
ROCKY MOUNTAIN



HUGH B. LEE
Maumee Collieries Co.
STRIP MINING

within the industry will help much to meet present problems, and is coal's guarantee of a prosperous future.

The 1944 Conference program has been patterned to fit the situation of the industry today by a country-wide committee of some eighty mining men. Their aim in arranging for the meeting was two-fold: (1) to keep the mines going at top-pace production, and (2) to pave the way for the post-war period by bringing the industry's attention to bear on some of the more important phases of future planning. In reaching for these objectives the program committee has performed admirable service in arranging several outstanding addresses by men prominent in the administration of the Nation's war effort, and in securing able mining men to analyze and discuss the timely problems of both deep mining and stripping operations.

Highlight of the Conference will be the address by Donald M. Nelson, at the Annual Dinner on Tuesday evening, May 2. Well known to all war-minded Americans for the gigantic task he has been performing, Mr. Nelson's important message will bear much pertinent advice and counsel and will be looked forward to in anticipation of a fuller enlightenment on the participation of mine operators and machinery manufacturers in the war effort. The dinner will be the climaxing event of the meeting and will afford operators and manufacturers opportunity for another of the enjoyable get-togethers which are so well known in connection with these annual meetings. Charles Dorrance, National Chairman for the Conference, will be toastmaster. The occasion will be informal and, in keeping with the times, no special entertainment features will be provided.



A. S. KNOIZEN
Director
Mining Division, WPB



WALTER SHOEMAKER
Machinery Branch, OPA

Two other features of the program are the luncheon meetings to be held each day. Dr. Charles Potter, Deputy Solid Fuels Administrator and Assistant Coal Mines Administrator, will speak at the Mon-

(Continued on page 48)

H. C. MOORE
Kentucky Coal Agency, Inc.
J. T. PARKER
Inland Steel Corp.
G. MOSS PATTERSON
Kentucky Department of Mines
V. D. PICKLESIMER
South-East Coal Co.

ALABAMA

C. S. BLAIR
Black Diamond Coal Mining Co.
P. H. HASKELL, JR.
ABC Coal & Coke Co.
I. W. ROUZER
Alabama Mining Institute
HAROLD McDERMOTT
New Castle Coal Co.

ROCKY MOUNTAIN DISTRICT

R. L. HAIR
Fuel Mines, Colorado Fuel & Iron Corp.
W. D. BRYSON
Utah Fuel Co.

D. H. PAPE
Sheridan-Wyoming Coal Co.
GEO. B. PRYDE
Union Pacific Coal Co.
E. S. O'CONNOR
Columbia Steel Co.

STRIP MINING

R. K. BEACHAM
Ayrshire Patoka Collieries Corp.
K. R. BIXBY
Midland Electric Coal Corp.
WM. L. BURT
The Jefferson Co.
HARRISON EITELJORG
Morgan Coal Co.
H. A. REID
United Electric Coal Cos.
B. H. SCHULL
Binkley Coal Co.
K. A. SPENCER
Pittsburgh & Midway Coal Mng. Co.
W. H. STEWART
Central Indiana Coal Co.
H. N. HICKS
Traux-Traer Coal Co.





HARRY M. MOSES

President, H. C. Frick Coke Co.
Chairman, Coal Division

THE coal mining industry has staggered through another year of war, with our problems accentuated and increased by numerous suspensions of operation, manpower shortages, and absenteeism, ending in government seizure and government operation under government-inspired labor contracts. We have before us the tremendous job of maintaining and increasing production from mines that in most cases have been pushed to their fullest production the past three years and are beginning to show the effects of this effort. We are not only going to be required to furnish the coal requirements for America but it is now apparent that we will be required to furnish part of the requirements of our allies.

It seems that under these circumstances our 1944 War Conference, which is being held in a period of comparative calm in the industry, is particularly significant. It is an opportunity for the industry to assemble its many good minds in an open forum to discuss the problems that lie before us in the light of our experience in the past. I urge every operator and manufacturer to be present, and I look forward to seeing you in Cincinnati on May 1 and 2.

Harry M. Moses



PROGRAM

MONDAY, MAY 1

10.00 A.M.—General Session

Opening of Conference

Planning for the Future of Coal Mining

Peace-time Production Problems Which Should Now Be Faced

D. L. McELROY, Chief Engineer, Consolidation Coal Company

Bituminous Research

A Program to Increase Coal Utilization.

CHAS. B. BATON, Geo. S. Baton & Co.

12.30 P.M.—Luncheon

Address—

C. J. POTTER, Deputy Solid Fuels Administrator, U. S. Department of Interior.

2.30 P.M.—Deep Mining Session

Underground Power Distribution

With Special Reference to Ignitrons for Mechanical Operations

C. R. NAILLER, General Manager, Hanna Coal Company.

Mine Ventilation

Modern Practices for Concentrated Workings

J. A. SAXE, Chief Engineer, Island Creek Coal Company.

Safety in Coal Mining

Methods to Train New Employees and Decrease Accidents

W. D. COHELIA, Safety Director, High-splint Coal Company.

2.30 P.M.—Strip Mining Session

Drilling and Shooting Overburden

Relative Economies of Various Methods

T. H. LATIMER, United Electric Coal Cos.

Haulage Systems in Strip Mining

Characteristics of Typical Layouts and Equipment

HOWARD ASBELL, Truck Superintendent, Sinclair Coal Company.

2.30 P.M.

Manufacturers Division

Discussion of Current Problems of the Mining Manufacturer

A. S. KNOIZEN, Director, Mining Division, War Production Board, and WALTER SHOEMAKER, Head, Construction and Extraction, Equipment Section, Machinery Branch, Office of Price Administration.

TUESDAY, MAY 2

9:30 A.M.—Deep Mining Session

Conservation of Fuel

A Study on Future Reserves of Coal, Oil and Gas

HENRY F. HEBLEY, Director of Research, Pittsburgh Coal Company.

Froth Flotation of Anthracite Silt

A New Process of Interest to Both Anthracite and Bituminous

W. JULIAN PARTON, Preparation Engineer, Lehigh Navigation Coal Co.

Complete Seam vs. Selective Mining

An Analysis of Factors Affecting Slate Separation Practices

J. W. WOOMER, Mining Engineer, J. W. Woomer & Associates.

9.30 A.M.—Deep Mining Session

An Unsolved Problem of Thin Vein Mining

Difficulties Encountered in Low Coal.

L. E. YOUNG, Consulting Mining Engineer.

Handling Rock in Thin Coal Seams

Grading for Belts and Brushing Haulways and Air-courses

WATSON STOREY, Assistant Chief Engineer, U. S. Coal & Coke Company.

Conveyor Mining in Rocky Mountain Field

Successful Methods Under Various Seam Conditions

T. E. JENKINS, President, National Fuel Company.

12.30 P.M.—Luncheon

Address: Army Ordnance in Action

BRIG. GEN. HERMON F. SAFFORD, Chief, Production Service Branch Office of Chief of Ordnance, U. S. Army.

2.30 P.M.—Deep Mining Session

Machine Maintenance

Methods to Keep Equipment in Full-time Operation

THOS. L. GARWOOD, Assistant Superintendent, C. W. & F. Coal Co.

Shuttle Cars with Loading Machines

Practices to Raise Efficiency of Loading Crew

G. STUART JENKINS, Assistant General Manager, Consolidated Coal Co.

Gathering Haulage for Mechanical Loading

Characteristics of Service Haulage Equipment

P. R. PAULICK, Consulting Engineer.

2.30 P.M.—Strip Mining Session

Drainage in Open Pit Mining

Methods and Equipment for Handling Surface and Pit Water

LAPE STEWART, Chief Engineer, Maumee Collieries Company.

Time Study and Production Engineering in Strip Coal Mining

Increasing Efficiency Through Use of Operating Analyses

GENE H. UTTERBACK, Production Engineer, Enos Coal Mining Company.

7.00 P.M.—Annual Dinner

Address—

DONALD M. NELSON, Chairman, War Production Board.



Manufacturers Division . . .

THE AMERICAN MINING CONGRESS

*Allis-Chalmers Mfg. Co.
Alloy Steel & Metals Co.
American Manganese Steel Division
*American Brake Shoe & Foundry Co.
American Brattice Cloth Corp.
*American Car & Foundry Co.
American Chain & Cable Co., Inc.
*American Cyanamid & Chemical Corp.
American Mine Door Co.
Anaconda Wire & Cable Co.
*Atlas Powder Co.

Barber-Greene Co.
Bixby-Zimmer Engineering Co.
Bowditch Company
Broderick & Bascom Rope Co.
*Brown-Fayro Co.

Cambridge Machine & Supply Co.
C. S. Card Iron Works Co.
Cardox Corporation
*Central Frog & Switch Co.
Centrifugal & Mechanical Industries, Inc.
Chicago Pneumatic Tool Co.
Cincinnati Mine Machinery Co.
Cities Service Oil Co.
Clarkson Mfg. Co.
Cleveland Rock Drill Co.
Colorado Iron Works Co.
*Cutler-Hammer, Inc.

Deister Concentrator Co.
Differential Steel Car Co.
Duff-Norton Mfg. Co.
*Du Pont de Nemours & Co., Inc., E. I.

*Edison, Inc., Thomas A.
Eimco Corporation
*Electric Railway Equipment Co.
Electric Storage Battery Co.
Ensign Electric & Mfg. Co.
*Enterprise Wheel & Car Corp.

Flood City Brass & Electric Co.
Gardner-Denver Co.
*General Electric Co.
*Goodman Mfg. Co.

* Charter Members.

Gorman-Rupp Co.
Gould Storage Battery Corp.
Great Western Division, The Dow Chemical Co.
Gruendler Crusher & Pulverizer Co.
Guyan Machinery Co.

Harnischfeger Corp.
Hazard Insulated Wire Works
Division of The Okonite Co.
*Hendrick Mfg. Co.
*Hercules Powder Co.
*Hockensmith Wheel & Mine Car Co.
*Holmes & Bros., Inc., Robert
*Hulburt Oil & Grease Co.

Independent Pneumatic Tool Co.
Ingersoll-Rand Co.
Interstate Equipment Corp.
Irwin Foundry & Mine Car Co.
*I-T-E Circuit Breaker Co.

*Jeffrey Mfg. Co.
Johnson-March Corp.
Joshua Hendy Iron Works
*Joy Mfg. Co.

Kanawha Mfg. Co.
Kansas City Structural Steel Co.
Kensington Steel Co.
Koehler Mfg. Co.

LaBour Company, Inc.
La-Del Conveyor & Mfg. Co.
Lee-Norse Co.
*Leschen & Sons Rope Co., A.
*Link-Belt Co.
Longyear Co., E. J.

*McGraw-Hill Publishing Co.
McLanahan & Stone Corp.
*McNally-Pittsburg Mfg. Corp.

Mack-International Motor Truck Corp.
Macwhyte Company
Marion Steam Shovel Co.
Mechanization, Inc.
Metal & Thermit Corp.
*Mine Safety Appliances Co.
Mine & Smelter Supply Co.
Morrow Mfg. Co.



GEO. E. STRINGFELLOW

Vice President, Thos. A. Edison, Inc.
Chairman, Manufacturers Division



THE Manufacturers Division was reorganized in 1942, following cancellation of mining exhibits for the duration, to make it an integral and supporting branch of the American Mining Congress. It has since grown from 48 to 133 members, evidencing the interest of mining manufacturers in working more closely with the mine operators for the general welfare of all mining.

Mosebach Electric & Supply Co.
 Mott Core Drilling Co.
 *Myers-Whaley Co., Inc.
 National Electric Coil Co.
 National Malleable & Steel Castings Co.
 Nordberg Mfg. Co.
 *Ohio Brass Co.
 Ohio Oil Co.
 Owens-Corning Fiberglas Corp.
 Pacific Foundry Co., Ltd.
 Penn Machine Co.
 Philco Corp., Storage Battery Div.
 *Phillips Mine & Mill Supply Co.
 Portable Lamp & Equipment Co.
 Post-Glover Electric Co.
 Princeton Foundry & Supply Co.
 Productive Equipment Corp.
 Prox Co., Inc., Frank
 Reliance Electric & Engineering Co.
 *Roberts & Schaefer Co.
 Robins Conveyors Incorporated
 *Roebbling's Sons Co., John A.
 Rome Cable Corp.
 Safety First Supply Co.
 Sauerman Bros., Inc.

Sheffield Steel Corp.
*Simplex Wire & Cable Co.
Simplicity Engineering Co.
*S K F Industries, Inc.
Stearns-Roger Mfg. Co.
Stephens-Adamson Mfg. Co.
*Streeter-Amet Co.
*Sullivan Machinery Co.

Tamping Bag Co.
Templeton, Kenly & Co.
Texas Company
*Timken Roller Bearing Co.
Tool Steel Gear & Pinion Co.
Traylor Engineering & Mfg. Co.
*Tyler Co., W. S.

Ultra-Violet Products, Inc.
Union Wire Rope Corp.
*United Engineers & Constructors Inc.
U. S. Rubber Co., Wire Division
*United States Steel Corp. Subsidiaries

Vulcan Iron Works Co.

*Weir Kilby Corp.
Western Cartridge Co.
*Westinghouse Elec. & Mfg. Co.
West Virginia Steel & Mfg. Co.



Speakers

COAL MINE WAR CONFERENCE



★ D. L. McELROY, Chief Engr., Consolidation Coal Co., Fairmont, W. Va., will take a long range view in his address on **PLANNING FOR THE FUTURE OF COAL MINING**, discussing problems of operation, labor and safety to be faced when the industry goes on a peace-time production basis.



★ W. D. COELIA, Safety Director, Highsplint Coal Co., Highsplint, Ky., is thoroughly conversant with ways to overcome accident hazards and his paper on **SAFETY IN COAL MINING** will include new problems introduced by the employment of untrained men.

★ CHARLES B. BATON, Consulting Engineer, Geo. S. Baton & Co., Pittsburgh, Pa., will speak on the important subject of **BITUMINOUS RESEARCH** and will outline the program now under way to increase the use of coal and find new outlets for its by-products.

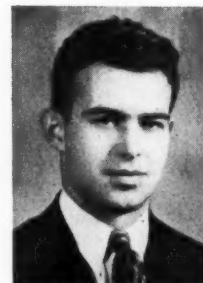


★ HENRY F. HEBLEY, Director of Research, Pittsburgh Coal Co., Pittsburgh, Pa., is making a special study on **CONSERVATION OF FUEL** and will present some conclusions as to the future position of coal in the over-all fuel picture.



★ C. R. NAILLER, Gen. Mgr., Hanna Coal Company, St. Clairsville, Ohio, will discuss modern **UNDERGROUND POWER DISTRIBUTION** for mechanical mining and will give special attention to the use of ignitrons.

★ W. JULIAN PARTON, Preparation Engineer, Lehigh Navigation Coal Co., Lansford, Pa., will describe a new method of **FROTH FLOTATION OF ANTHRACITE SILT** giving results of pilot plant tests on the recovery of fine coal from cleaning plant waste.



★ L. E. YOUNG, Consulting Mining Engineer, in his paper on **AN UNSOLVED PROBLEM OF THIN VEIN MINING** will outline some difficulties encountered in operating under adverse seam conditions.



★ J. W. WOOMER, mining Engineer, J. W. Woomer & Associates, Wheeling, W. Va., will compare practices in **COMPLETE SEAM vs. SELECTIVE MINING**, analyzing the factors which determine the economic limits of various mechanical methods for removing seam impurities.



★ J. A. SAXE, Chief Engr., Island Creek Coal Co., Holden, W. Va., in discussing MINE VENTILATION will deal primarily with modern practices to suit the requirements of mechanical mining, covering details of main circuits and section splits.

★ HOWARD ASBELL, Truck Supt., Sinclair Coal Co., Kansas City, Mo., in presenting the subject of HAULAGE SYSTEMS IN STRIP MINING will explain reasons for selecting various layouts and types of equipment.

★ T. E. JENKINS, Pres., National Fuel Company, Denver, Colo., will speak on high tonnage with CONVEYOR MINING IN THE ROCKY MOUNTAIN FIELD under various seam conditions where conveyors have been used successfully.



★ WATSON STOREY, Asst. Chief Engr., U. S. Coal & Coke Co., Lynch, Ky., will describe methods of HANDLING ROCK IN THIN COAL SEAMS describing operations with chain, shaker, and belt conveyors for mining and gathering.



★ T. L. GARWOOD, Asst. Supt., Chicago, Wilmington & Franklin Coal Co., Benton, Ill., has one of the most important subjects of present day mining—MACHINE MAINTENANCE and ways to keep equipment in full time operation in spite of material and man shortages.

★ T. H. LATIMER, United Electric Coal Co., Chicago, Ill., will describe METHODS OF DRILLING AND SHOOTING OVERBURDEN, covering ways designed to meet divergent conditions and showing the relative economies of the various methods.



★ G. STUART JENKINS, Asst. Gen. Mgr., The Consolidated Coal Co., St. Louis, Mo., in his paper on SHUTTLE CARS WITH LOADING MACHINES will describe methods of using equipment so as to increase the efficiency of a mechanical loading unit.



★ LAFE STEWART, Chief Engr., The Maumee Collieries Company, Terre Haute, Ind., will discuss DRAINAGE IN OPEN PIT MINING, giving accounts of experiences in handling surface and pit water.



★ PAUL R. PAULICK, Cons. Engr., Library, Pa., will discuss GATHERING HAULAGE FOR MECHANICAL LOADING outlining the characteristics of the several types of service haulage equipment with mine cars, belts, shuttles and transfer cars.

★ GENE H. UTTERBACK, Prod. Mgr., The Enos Coal Mng. Co., Oakland City, Ind., in his paper on TIME STUDY AND PRODUCTION ENGINEERING IN STRIP COAL MINING will show how time studies and analyses of performance records can raise the efficiency of strip operations.



(Continued from page 41)

day luncheon on vital manpower, production and distribution issues. A former industry executive, his close contact with the whole solid-fuels problem will enable him to talk to coal mining men in their own language on all the ins and outs of the governmental restrictions on their business. At the Tuesday noon luncheon meeting, Brig. Gen. Hermon F. Safford, Chief of Production Service in the Office of the Chief of Ordnance, United States Army, will give the Conference crowd a first-hand picture of some of the interesting aspects which ordnance materials play in performance of our national military tasks.

The opening session of the conference will be devoted to two of the major over-all problems of coal mining—post-war planning and research. The discussion of "Planning for the Future of Coal Mining" will take a long-range point of view and recommend procedure which the industry should adopt to prepare now for what seems to be in store following the war. An address on "Bituminous Research" will outline the program now under way to raise the efficiency of combustion practices, to increase the use of coal and to find new outlets for its multitudinous by-products. Coal mining must be realistic about the years immediately ahead if it is to come through even with moderate success, and this opening session is intended as a sort of guide-post pointing toward tomorrow.

Operating problems will come in for a full share of attention by experts in the various fields at the further sessions. Included will be discussions of the application of ignitrons to mechanical mining operations; the ventila-



HOWARD I. YOUNG
President, American
Mining Congress

tion of concentrated underground workings; the pros and cons of complete seam versus selective mining, through an analysis of slate handling operations; a study of the conservation of fuel which will present some conclusions as to the future position of coal in the over-all fuel picture; conveyor



CARL T. HAYDEN
Vice Pres., Sahara Coal Co.
Chairman, Floor Committee

mining practices for low coal and other special seam conditions; methods of handling rock derived from brushing and grading in thin seams for conveyors; maintenance of equipment and machines under today's limitations on materials and manpower; the new froth flotation method for cleaning fine sizes of coal; efficient use of shuttle cars with loading machines; factors to be considered in selecting service haulage equipment; and last, but always of great importance, safety and accident prevention practices with special reference to training of new employees.

Special problems of strip operations will be considered at two separate sessions and will include the economies of various practices in drilling and blasting overburden; haulage layouts and equipment, open-pit drainage methods, and the application of production engineering principles to open-pit operations.

Mining manufacturers will have opportunity for considering some of their own particular problems following a brief business meeting of the AMC Manufacturers Division on Monday afternoon, to be presided over by George E. Stringfellow, chairman. This meeting will be an informal off-the-record round table for them to talk over such matters as OPA price policies and regulations, materials procurement, lend-lease and export problems. Walter Shoemaker, head of the Construction and Extraction Equipment Section, Machinery Branch, OPA, and Arthur S. Knoizen, Director of WPB's Mining Division, will attend and join in the discussions. The Board of Governors of the Manufacturers Division will hold its annual meeting and election of officers immediately following.

Attendance at this Coal Mine War Conference is open to all mining men and manufacturers interested in the activities of the industry, and all are cordially invited to attend. There will be ample time for floor discussion at all sessions.



COAL MINE WAR CONFERENCE

AMERICAN MINING CONGRESS

Stockpiling of Metals and Minerals

Legislation is needed immediately to provide for a sane stockpiling program

By

EDWARD H. SNYDER

President
Combined Metals Reduction Co.

and

ROBERT M. SEARLS

Attorney at Law
San Francisco



Edward H. Snyder

THE ILLNESS of one of our industry's true friends, Senator J. G. Scrugham, of Nevada, accounts for my appearance on the program of this Denver conference to discuss stockpiling. This subject was handed to me after my arrival in Denver; I therefore have no prepared address. I am going to endeavor to avoid the predicament of one of our shaftmen, a hard-rocker, who knew his "job" and one of the few men on our entire crew who could successfully drill the tough quartzite in the bottom of a 1,400-ft. vertical shaft into which 600 gals. of water per minute were pouring from between the 900 and 1,100 levels. One morning the superintendent found this man at the bunkhouse with his face badly scratched, both eyes blackened, a sprained wrist, and generally in bad condition. The superintendent said, "Martin, what in hell happened to you?" The big fellow replied, "Well, I'll tell you; I was talking when I should have been listening."

At previous sessions of this meeting you have been told by Messrs. Bunker, Young, Hayes and others that the metal industry has done an excellent job of production, and we

now find ourselves with comfortable supplies of most of the metals to meet presently estimated war needs, when considered in connection with our present capacity to produce and, in the case of some metals, we have admittedly large excesses. We are cautioned, however, by Mr. Howard Young that in spite of our comparatively large metal stocks that we must continue production of the heavy metals at the current rate, as no one can as yet tell when our war with Europe will end and how much material will be required for the job.

Most of you can remember statements made last summer to the effect that the war would be over early in 1944. The optimists who made these statements have paid their bets, and now you occasionally find men who think the war with Germany will last through 1945. Therefore this matter of trying to tell how much we should have and whether we should continue production is still more or less of a guess in connection with some of the metals; in the light metals we understood from Mr. Bunker that the present supply is probably way in excess of anything we shall need.

The job, however, appears to me as similar to that of climbing a high peak. The summit of the ridge ahead may be just one of many we must reach before we are at the top. I am not optimistic enough to think we are going to win this war in 1944; therefore I agree with Mr. Young that we should continue the current rate of production of the heavy metals. I was one of the zinc producers who suffered for 10 years prior to the outbreak of this war and who observed from time to time that insignificant increases in stocks—fifteen hundred to 2,000 tons a month added to a stock of fifty or sixty thousand tons—resulted in sharp decreases in price. In view of this, when we look at estimated probable stocks of zinc at the end of 1944—totaling 800,000

tons of metal above ground (including metal equivalent in concentrates) as against a normal stock of fifty to sixty thousand tons of slab zinc and a rate of production equivalent to 200,000 tons a year over and above consumption—it's natural we should ask, "Where do we go from here?"

As I see it, we appear to have a hazard similar to that of one of our expert pick miners, who was working in an open stope and who lost his life by having the ore he had energetically mined not only fill the oreshoot but the adjoining manway, due to the failure of the trammer on the level below to do his share. In the case of most of the metals, the oreshoot is full and the manway is becoming filled. The War Production Board has full responsibility for the tramming, and must see to it that we are not destroyed for doing too good a job. The industry cannot protect itself with present Government restrictions on the use of metals for civilian consumption. I do not question the need of these restrictions, but as a matter of equity and for the nation's welfare, now and after the war, the domestic metal industry must not be suffocated.

Stockpiling as Insurance for the Future

High Government officials and all of the members of the industry at this conference seem to be in agreement that Government stockpiling of surplus metals and minerals appears to be the best way to not only insure the metal industry against disaster in the immediate future, to insure the safety of the nation against shortages of vital materials in war, insure employment in the post-war period, but just as important, to insure the lengthening of the peace period after the fall of Tokyo. Large stocks of metals ready for use above ground will be the same kind of notice to our enemies that our rights must be respected as that which will be given by an adequate Navy and air force.

Although we seem to be in agreement on the matter of stockpiling surplus materials, a diversity of opinion exists as to the kind of materials to be stored, the prices to be paid for those not now owned or controlled by the Government, and whether or not new purchases should be from foreign sources.

In the various discussions to which I have listened in this conference, I am pleased no one has proposed that surplus metals be marketed immediately after the close of the war. Such

Presented to joint meeting of American Mining Congress and Colorado Mining Association, Denver, Colo., January, 1944.

a procedure would not only shut down a large portion of our industry for several years but would uproot the people in our mining communities, destroy an important market for many industries throughout the nation and give the American taxpayers a relief load costing far in excess of the amount represented by the value of the surplus metals.

A long time prior to the outbreak of the war our worthy Senator from Nevada recognized the need of stockpiling critical materials that were not available in sufficient quantities in this country and finally succeeded in getting legislation to make this possible. Unfortunately, little action was taken to make this legislation effective and we entered the war with inadequate supplies of many critical materials.

Since the outbreak of the war, unavoidable waste incident to attempting to get adequate supplies of metals for pressing war needs has cost many times what orderly stockpiling would have involved if the administrative agencies of our Government had carried out the intent of Congress.

Senator Scrugham has introduced Senate Bill 1582 and Congressman Harless, of Arizona, House Bill 3991 on stockpiling, indicating that both these gentlemen are awake to the need of dealing now with the problem of surpluses and providing for the future welfare of the nation. I shall not attempt a discussion of the details of these bills, but suggest you study them for yourselves, as well as a proposal by Mr. F. H. Brownell on the matter of stockpiling metals.

A great difference of opinion exists

in our industry, to say nothing of outside, as to what materials should be stockpiled, for how long, in what amounts, and from whom purchased, and the prices to be paid therefor. These differences are primarily due to differences in economic interests, and the differences that exist between those who believe the Government should continue to control our industry and those who believe in the system of private enterprise that built the industrial backbone of this nation strong enough to insure victory in this war of materials in spite of 10 years of Government malpractice throughout the land.

I have neither the time nor the inclination to argue the merits of these differences. My viewpoint is that of a domestic producer of raw materials, whose only option is to abandon ship when metal prices controlled by the world market or Government do not exceed the costs of production. From this viewpoint, I submit for your analysis that legislation should be passed immediately to provide for:

1. Stockpiling all surplus metal and mineral products owned or controlled by the Government that are in a usable form suitable for long storage.

2. Stockpiling all surplus concentrates, scrap, secondary metals and products owned or controlled by the Government that are not in suitable form for use for long-time storage until such time as ample capacity of metal plants and labor supply is available to permit processing to suitable form for use and storage.

3. That all usable products that are suitable for storage derived from processing the Government-owned

materials or an equivalent quantity thereto shall be placed in stockpiles, as in paragraph 1.

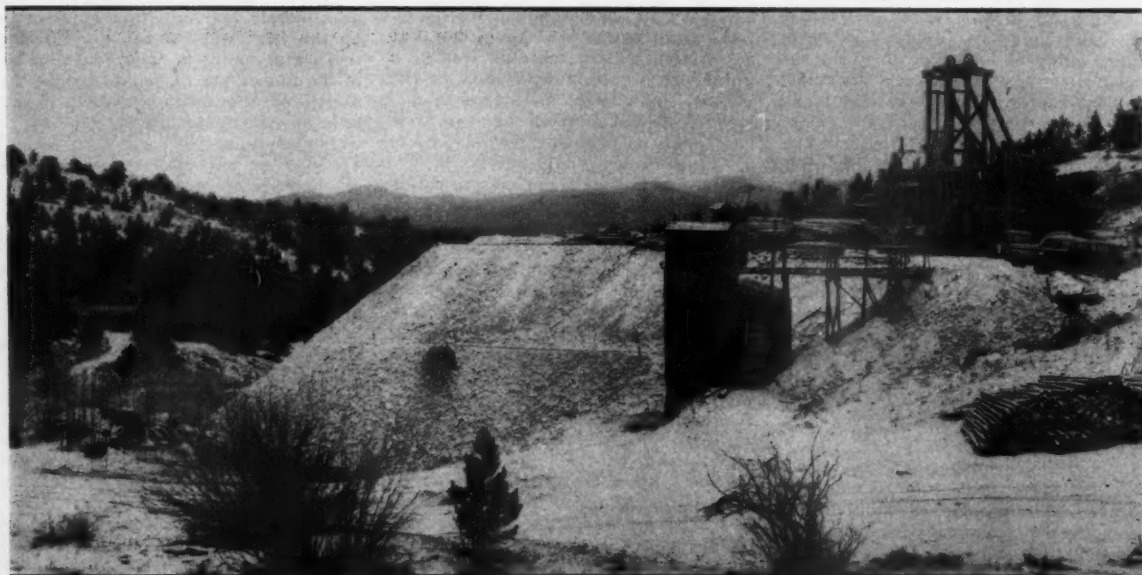
4. That no surplus metal or products owned by the Government shall be taken from stockpiles and sold for private use without specific authorization by Congress.

5. That after cessation of hostilities, essential metals and mineral products in quantities and form specified by the Army and Navy, and that are not available from domestic sources, shall be purchased from foreign countries at prevailing world prices and put in stockpiles for use in national emergencies.

6. That until after cessation of hostilities and a free civilian market is again established, the Metals Reserve Company shall continue to buy from domestic producers, at not less than present ceiling prices, all metal and mineral products tendered to it.

A great number of nonferrous metal producers are concerned with the recent statements from high Government officials to the effect that our natural resources were about exhausted and that after the war the Government should buy and place in stockpiles large quantities of foreign metals.

This brings me to another sore spot as to whether or not our Government should purchase from foreign sources and stockpile the common metals produced normally in sufficient quantity in this country to supply our needs. Opinions on this vary as between friends in this Congress in proportion to relative quantities of their respective productions from domestic and foreign sources.



Unrestricted marketing of surplus war metals and minerals can shut down mines and displace whole mining communities to the detriment of the nation

Our present needs call for huge mineral supplies and development of strong mineral enterprises



I think there is general agreement among us, however, that the inference that our mineral resources will soon be exhausted is a fallacy developed in Washington to further justify the policies of the internationalists who believe the world's salvation is a large volume of foreign trade, regardless of what happens within our own country. Mr. Coulter gave one of the best papers that it has ever been my privilege to hear in a Mining Congress meeting at this morning's session on the subject of tariff,* and I will

* Mr. Coulter's address appears on page 31 of this issue.

therefore not deal further with that subject.

Eliminating the fallacy as to the depleted condition of our mineral resources, the proposal for purchasing from foreign sources and stockpiling the common metals for use only in national emergencies or 100 years hence certainly would be to our advantage if we could pay for such imports in the questionable IOU's of our neighbors, but we should not make the American taxpayer foot the bill for such an experiment beyond the commitments already made.

Another matter we must watch in

connection with stockpiling, and that is to make sure that stockpiling shall not be the opening wedge to give permanent control of our industry to Government bureaus or boards.

With reasonable price protection during the war period, and the proper handling of surplus Government-controlled stocks, we should get back to the law of supply and demand just as soon as we possibly can after the Government permits us to sell our products to civilian consumers.

I trust our friends in Congress will not permit our sacrifice for doing a good war job.



Robert M. Searls

OUT in California we produce a little of most everything and not very much of any one thing in the metallic line, except gold, now verboten, and quicksilver. I presume you could take most of our strategic metal and copper and zinc mines and put them altogether in the big pit out at Ruth, Nev., and wouldn't be able to find them. Nevertheless, when the war came on the Metals Reserve and other

Government agencies came to California miners, as they did to those of every other state, and asked them to lend their properties, their efforts, their money and their labor to produce those metals which were badly needed. Some of them were aided by Government financing. So far as these latter are concerned, except for compensation for their own labor, they probably have no legitimate complaint if the Government says: "Very well, Mr. Miner, we now have an adequate supply of chromium, tungsten, manganese, or something else. We will take our loss, you shut down your property."

In other cases, however, men who had put their own money into this call from the Government feel that they have a legitimate ground for the request that, if they are to be cut back, they at least be allowed to get their investment out with reasonable interest. That is ordinary justice, looking at it from a miner's point of view. I think that is what Senator Scrugham had in mind when he drew his bill and presented it to Congress.

It provides particularly for the protection of the small marginal miner and, from the standpoint of individual justice, it sounds very fair. You can also make the argument that it is in the national interest to have a large number of these strategic metal mines kept in a state of development where they might be utilized for future production. That's one side of the picture.

Firm Economic Basis Needed

There is another side. Unless the American mining industry stands on a firm economic basis, production must be regulated through cartels or Government, and you have politics injected into the industry in the same way that it has been injected in Europe. You have the constant threat overhanging the industry of changing politics affecting the prices and supply in the market and the very existence of your producer. I don't think we American miners want that to happen. We have got to approach this stockpiling proposition with a clear conception of what it all means. It

is needless to say that after this war there are going to be enormous quantities of the base metals—copper, lead and zinc; of the ferroalloying metals, such as tungsten, molybdenum, manganese and chromium, and other critical metals such as quicksilver, which are either going to be frozen in some way or are going to flood the market in a way that will make the hard days after the last war look like easy times. It looks now as though stockpiling were the solution of this particular problem.

The Army and the Navy will not tell us today, for military reasons, just what they have on hand of all of these things. The Metals Reserve is a little franker, but it is sufficient to say that with respect to practically every one of these metals there will be an overstock after the war if the present rate of production continues. No one can tell when the war will end. The armed forces must demand a margin of safety so they will not be caught short, and if that is done, when the war does end there will be large quantities of metal and concentrates on hand and even larger quantities of battlefield scrap and minor products of metals returning to the market. Just to illustrate what I mean by the last, I am told by quicksilver people that large quantities of quicksilver have been produced in the form of mercurials, or quicksilver chemicals, which could, with very little application of heat or other simple chemical treatment, be turned back into metallic mercury that would constitute a very substantial stock. Those mercurials were produced for war munitions and when the forms in which they are produced are no longer used they too will add to the problem. I think that is probably true of some of the other metals, that there are chemical products of them which could be reduced to scrap form and constitute a threat to our industry in that way.

Protection by Freezing

If we have stockpiling legislation, and I have no doubt but that Congress has the constitutional power to pass it as a war measure, why not have it in such a way that we freeze these stocks so that no politician or administrative bureau can ever turn them loose on the public market unless another act of Congress so directs it. One Congress can't control the action of another following, but if we do have an act of Congress to do it, at least the miners will have an opportunity to be heard and the economic situation thoroughly gone over. So I am heartily in accord with the thought that the freezing of these existing stocks is essential.

The question of foreign purchases is a very complicated one. We have foreign purchases coming into the

market today which are called preclusive purchases, which have been made at the instigation of the State Department or some other authority to prevent the enemy from getting hold of strategic metals. I don't think any of us would say that they should stop those purchases now but, obviously, if those purchases are causing a surplus in the domestic market they too should be frozen. Then, again, under the good neighbor policy and under rehabilitation of the world there must be trade between nations. If we are going to be a great industrial nation, if we are going to manufacture products that are sold all over the world, we must expect to import some quantity of raw materials. We can't expect to sit back and say we'll produce all of the basic metals that are needed or that we will not import anything from Chile or Peru or South Africa or Turkey or Asia, but will produce it all ourselves. We can't say that.

Return to Normal Trading

I am not going to enter into a tariff discussion, but somewhere along the line a rule must be drawn that will protect American industry from annihilation. I don't think that should be done through Government purchases. It seems to me that with the termination of the war the right of Government to buy abroad just for the sake of keeping up good fellowship with this or that country should cease. There will no longer be a reason for preclusive purchases. Trade will have to return to channels between individuals and not between governments. If it does not do that, there will be a battle between cartels, such as existed between Germany and other nations just prior to the war, with the disastrous effects which were felt even in this country. Therefore, with respect to foreign purchases, that matter must be left to the normal course of trade, plus an intelligent consideration of the tariff question, one that will allow other countries to live and to trade with us and at the same time allow our domestic production to be kept alive.

If this is done there is only one other factor that I think need be added. That is the accumulation of those metals which we do not produce and can not produce in sufficient quantities to meet the national emergency. Mr. Bunker has pointed out quite clearly that there should be some accumulation of the metals which are rare so far as this country goes: tin, tantalum, quartz crystals, mica and some others that we can't readily produce. How much should be accumulated can probably best be left to a Government agency, perhaps the Metals Reserve Company, who are pretty well informed on the subject, and should be accumulated in

their hands and frozen as a stockpile for protection against future emergency in the same way that you maintain a savings bank deposit to protect you against domestic emergency. If the program is limited in this way I don't think we are going to run into too great an expenditure of money on the one hand or the creation of a political octopus, threatening the integrity of our free enterprise, on the other. I am not satisfied that Senator Scrugham's bill meets this criterion, nor does the bill of the gentleman from Arizona. There is an element of politics in both.

The problem should be viewed from a national point of view; that the American taxpayer shall not be assessed in order to keep Joe Doakes going in his marginal mine, which he never would have produced except for the national emergency. On the other hand, I think that Joe Doakes is entitled to a fair deal in getting out to the extent that the Government got him in, when the time comes to cut back his production and shut him down. I know this situation obtains among the small mines in California. There are hundreds of small quicksilver mines there that are shutting down now because the Government support has been withdrawn. The Government has been very fair in most of those cases. Many of them are financed by Federal money and where they weren't there is usually no trouble in ironing out a contract on a fair basis. It may have to be applied temporarily to larger mines.

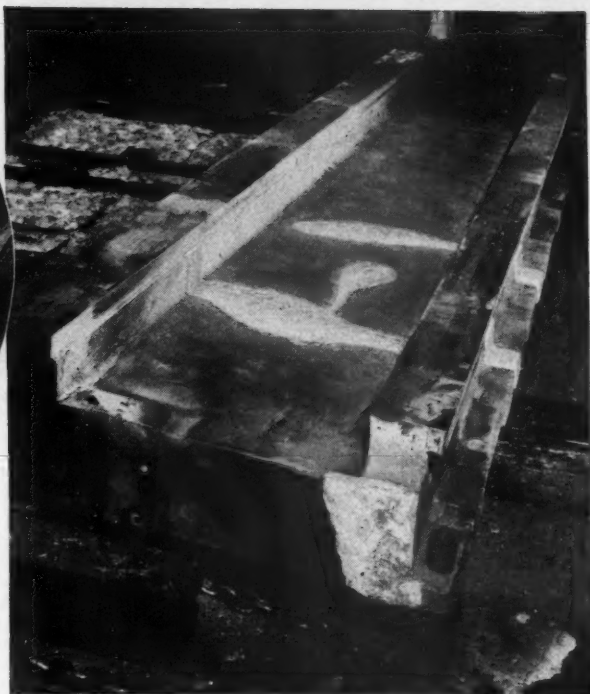
It would seem that in some of these mines, like the big tungsten mines in Idaho, Nevada and Utah, the larger quicksilver mines in California, the chrome mines—perhaps we haven't so much to say about that because our chrome is all very low grade—there is something worth preserving for future emergency. Still we have chrome deposits which are mined in Montana, as you well know, one large operation in California and quite large deposits in southern Oregon. It might be worth while for the Government to see that the means of reopening those strategic metal properties that are closed are kept available to the nation for future emergency. I believe that all this could be done by a rather short and simple congressional enactment.

If Congress were shown that all of this is being done to conserve what they have already bought and paid for, and not allow it to be dumped on the market to the ruin of the mining industry and the incidental loss to the Treasury and business and everything else has happened after the shutdown of the gold mines, Congress should be willing to listen to such an act, and I hope that the American Mining Congress, following its Resolutions Committee recommendations, will stand back of some such procedure.

Chalk up *ANOTHER PRODUCTION VICTORY* for Bronze Repair Welding



Above: 3,000-pound saddle of milling machine reclaimed by Bronze Welding.



Right: Severed ribs in this base were welded as well as part of the bed.

A MILLING MACHINE was being moved to an important new war production job when the chain supporting it broke. Crashing to the floor, the machine was badly damaged. A long, costly production delay threatened until a new one could be obtained.

Then bronze welding came into the picture. Using this time-proved repair process, both the 15-ft. long base, weighing approximately 19,000 pounds, and the 3,000-pound saddle were quickly repaired by the

Super Arc Welding Company, Detroit, Mich. 850 pounds of $\frac{3}{8}$ " Tobin Bronze* Welding Rod put the machine back on the job in a week.

For speedy repair welding of cast iron, steel, malleable iron and copper, don't overlook the advantages of such rods as Tobin Bronze and Anaconda 997 Low Fuming. Complete information on these and other Anaconda Welding Rods is contained in Publication B-13. Copy on request.



FOR VICTORY—BUY MORE WAR BONDS

*Reg. U. S. Pat. Off.

Anaconda Welding Rods

THE AMERICAN BRASS COMPANY—General Offices: Waterbury 88, Conn.

Subsidiary of Anaconda Copper Mining Company—In Canada: Anaconda American Brass Ltd., New Toronto, Ont.



The New Idria mine in California is one of many properties which have been furnishing important war minerals

Prospects for Western Mining

The Prediction is That With Reasonable Freedom of Opportunity This Great Mining Region Will Continue as a Major Contributor to Mineral Production

By F. A. WARDLAW, JR.

Manager,
International Smelting, Refining and Mining Co.

INNUMERABLE factors enter into any picture of prospects for Western mining. Secretly most of us hold to the belief that somehow or other western mine operations will live through the troublesome times that are with us now and still lie ahead. Ultimately we'll get back on our feet again as we've always done. We'll do it differently this time because the set-up is different than ever before. We'll make it though because *the production of metals has got to go on*. This time, we have a serious labor situation to cope with. Who can tell what part Washington will play! How much tougher will taxes get? We have always had problems that keep us guessing but we've landed on our feet so far. With proper cooperation all around the industry will go on as it always has.

We Can Look Ahead

As I see it, we have three periods in the industry to get set for: (1) Continuance of the present war period; (2) Adjustment years, maybe two to five; (3) Post war period when "business as usual" will become a reality.

For the time being, until this war is won, there should be little doubt as to the scale of productivity of the metal mines. We'll still have to turn it out. I don't imagine there'll be much change in the difficulty of doing

it—but we'll get the production needed just the same. We who are operators will continue to shoulder the responsibility of going along with the war effort. There will be the usual three factors of importance: (1) Manpower. (2) Wages. (3) Supplies and Equipment. Of these, lack of manpower and high wages will probably continue troublesome. We are dependent upon the proper perspective of selective service boards, whom we hope will be governed by equitable directives from the War Production Board. In the matter of wages we'll have to rely on the willingness of labor to be satisfied with the present wage rate which is more than sufficient to meet higher costs of living. At present our average increase in wages over January 1, 1941, has been 63 percent. Increase in straight time rate, disregarding all overtime or extra pay, is 25 percent. However the "take home" check is the figure to use for comparative purposes. Statistics show cost of living for an average district has gone up 22 percent. I believe that's true

of Denver, according to the Bureau of Labor Statistics.

The president of a prominent civic organization recently said that all we need is to have the employer on one side, and the employe on the other, get together and iron out their differences; and to have the national administration reduce expenses of government. The thought is noble but there seems little chance that either of the hopes can be realized. Western metal mines will muddle along, however, *and produce the goods*. As far as item (3) is concerned on supplies and equipment, as long as OPA and WPB continue to administer with the same careful consideration they have already shown, we'll be all right.

Important Aid

By far the most important contribution to the success of the production program has been the assistance given by the Priorities division of the WPB, and the Premium pay committee. The Manpower Commission has tried to help, but not too successfully. I think it is the general

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opinion among western miners that the members of these committees have done a swell job, and I don't imply that they have been overly generous. They've figured carefully and fairly from the standpoint of both government and the producers. It has worked out, in most cases, that companies have come out with some profit, however small to help offset the loss of valuable ore reserves. Mine owners have not begrudged the loss of ore reserves in the interest of the war effort. Many mines however, will end up almost hopelessly behind on their development work.

Now, I hold no brief for the New Deal and I enjoy hearing it panned because I believe a great many of their ideas are cockeyed with the American way of life. This is because in their midst in Washington and all over the country are many unnecessary so-called hirelings. Some however are not. They get one dollar a year and are honest-to-God patriotic men in there pitching all the time. They are trying to handle a difficult situation and any question as to prospects for Western mining must include their honest effort. We hope when the War Department gets around to passing out silver stars for civilian effort and sacrifice they don't forget our fellows—some former, some still active members of the American Mining Congress—men like Howard Young, Harry Hays, Pat Page, Fred Searles, Frank Ayer, Jimmy Head, George Heikes, and others too numerous to mention. And, because I haven't mentioned them, I don't want them to feel slighted because there are hundreds of them.

After the War Views

Immediately after the war the picture of Western mining business can look pretty grim, unless production can continue because of some good reason such as a program of stockpiling. Even that way out for the industry can go sour unless we continue to get government help on metal prices, and/or a reduction in wages. We may have to get both to make the grade. There will be manpower in too great plenty and somehow, some way, *work must be provided them.*

There are not many Western mining companies who can continue operation and afford employment for any length of time unless they can at least break even. In the case of those who could get by for awhile running at a loss, it certainly isn't going to be smart or economical for them to do it. Loss of financial reserve would play havoc with the starting-up of large properties after a shut-down because, in the case of these shut-downs, if they come, mines will be just about completely out of development work with a long spell of no production ahead of them. No—

we've got to keep them up. Exhausting ore reserves—stifling development work and exhausting company treasuries to give employment just for a few months at the expense of being able to resume operations later in a sound sort of way, is not good. The solution lies in stockpiling or some other means of absorbing production while Western mines get some help from Washington on metal price, and labor sees fit to take a reduction in wages.

After this period of adjustment, during which time stockpiling may have been completed, it is certain that new base metal stocks will be needed for civilian needs. Increase in production will likely come gradually and with it a consequent increase in employment. The degree of purchasing in this country should depend a great deal upon the extent to which civilian war workers have saved for just this period. It has been stated that in September, 1943, over \$13,500,000,000 worth of series E war bonds were actually held: about fourteen and three-fourths billion had been bought and about one and one-third billion redeemed. It is further stated that 26,000,000 workers are putting more than nine percent of their pay into war bonds each month. If the percentage is substantial, then the use of metal, as well as other commodities will gain in increasing amounts. There should be a large demand for instance for new automobiles, refrigerators, household furnishings of all sorts, etc. We are hoping this will be the case. It is upon the demand in this country, as well as that in foreign countries, that we pin our hopes for pretty fair prospects for Western metal mining.

In making a guess of this sort we can't overlook the possibilities of a market in foreign countries, either those devastated by war or those that we hope will be occupied by Allied soldiers. The countries who have already tasted the comfort and convenience of modern living are not going to be happy until replacements have been made. You may say they can't have it without credit, but it is that important that it will be done somehow. And, in the countries occupied by Allied soldiers who will live there for a couple of years (the Asiatic countries for instance) our men are bound to sell the idea of modernization. So I'd say the period following adjustment has bright possibilities.

The demand for metal should then take care of price. More than a plentiful supply of labor should ease the situation materially on unreasonable demands for wage increases. Then the principal problem of the country might be to get the cost of living down to the scale of wages that industries can afford to pay.

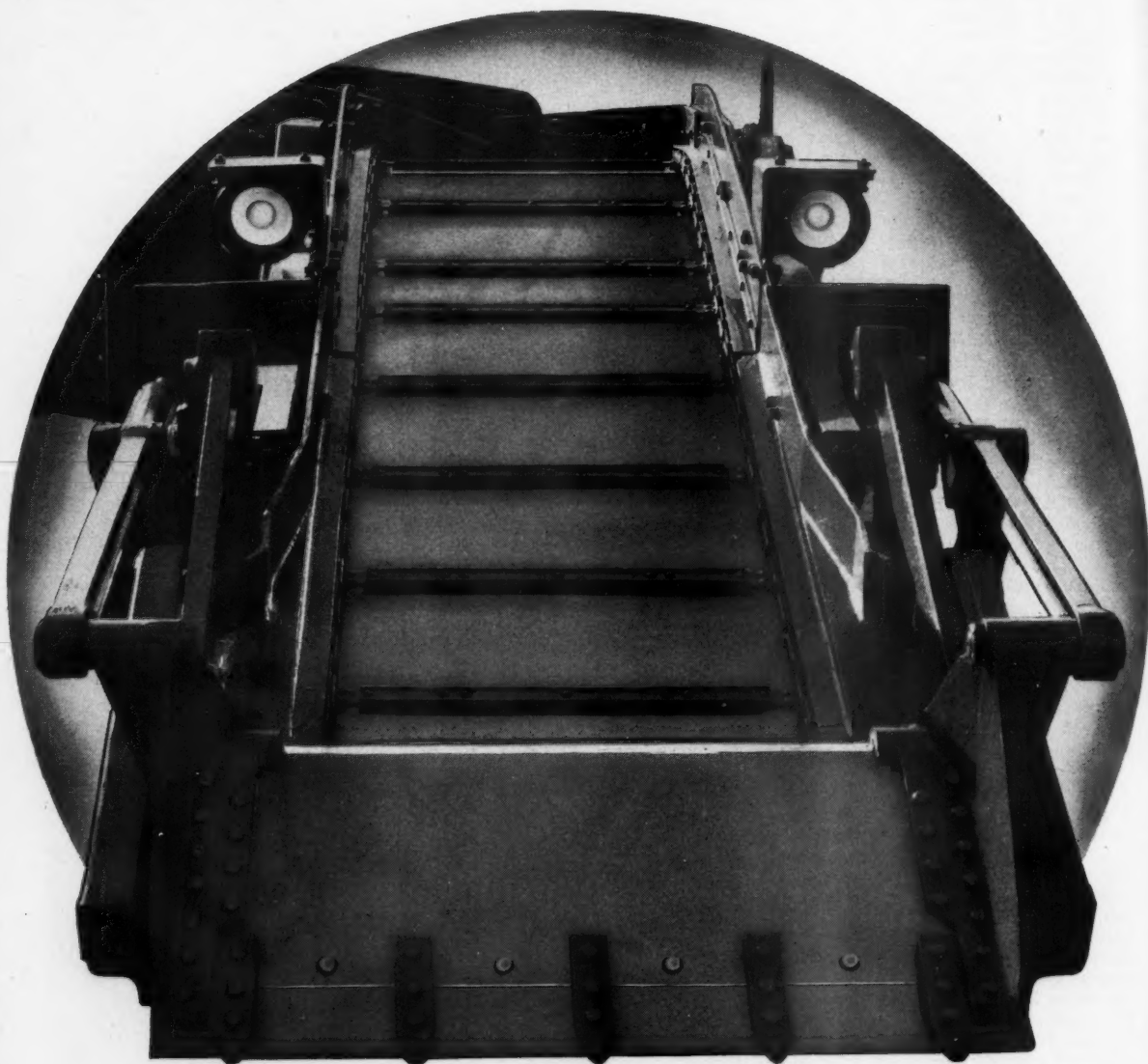
In any case I think it is the consensus of opinion of all mine operators that when this war is over the sooner we can get away from government help, and be given the chance to stand on our own feet, the better it will be for all concerned. Our experience with Washington bureaucrats during the war has not been too unpleasant. The various bureaus and commissions have done their best to cooperate and while at times it has been difficult, nevertheless the end has certainly justified the means.

The country can't say we Western miners have fallen down on metal production for the war effort.



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Fracture Zones In Mine Strata

TWO general classes of mine roof falls are those which result from structural conditions and those which result from or accompany weathering of the roof strata. Structural conditions are caused by geologic stresses as indicated by the lines of cleavage, fault planes, etc., in the strata of the mine, and stresses in the roof rock may also be caused by mining operations, while the weathering action is produced by temperature changes, by the loss or gain of moisture and by chemical reaction. Either of these forces or reactions create strains which may rupture the rock and when the roof falls are due to weathering paints and gunite have been used successfully to seal the roof rock from deteriorative action of moisture and oxygen of the air.

The mine in the Pittsburgh seam in western Pennsylvania where the roof sealing project is being studied by the committee contains local areas in which geologic stresses have definitely affected the roof structure. These fracture zones are local small scale disturbances, but they may occur frequently over large areas; fractures meeting in the form of a wedge are readily discernable and the roof has fallen in some of these places to a height of 20 ft. Timbering or heavy application of gunite (perhaps reinforced) will be necessary to hold top of this character and even this will

not suffice in cases where the rock is crushed into loose wedge shaped fragments to great heights. The intensely fractured areas are only a few feet wide and the roof falls gradually decrease away from the fold, so that beyond one to two hundred feet from the center of the disturbance, the paint on the roof is still intact with no falls in evidence.

Underground Mine Inspection

Inspection showed there were a surprisingly large number of these fracture zones, usually with clay dikes, in the painted sections and these fracture zones along with other pertinent data relating to the sealing project were plotted on a map of the mine on the following page.

Referring to this map, and beginning at the western out-by end of haulage No. 1, the first 400 ft. were fallen badly. Four fracture zones with clay dikes cross the entry and oxidation stains were present everywhere. The paint was intact on the next 400 ft. in which two minor fracture zones without clay dikes crossed the haulway. Oxidation showed only in the lower 18 in. of coal. The next 100 feet of roof was unpainted, had two

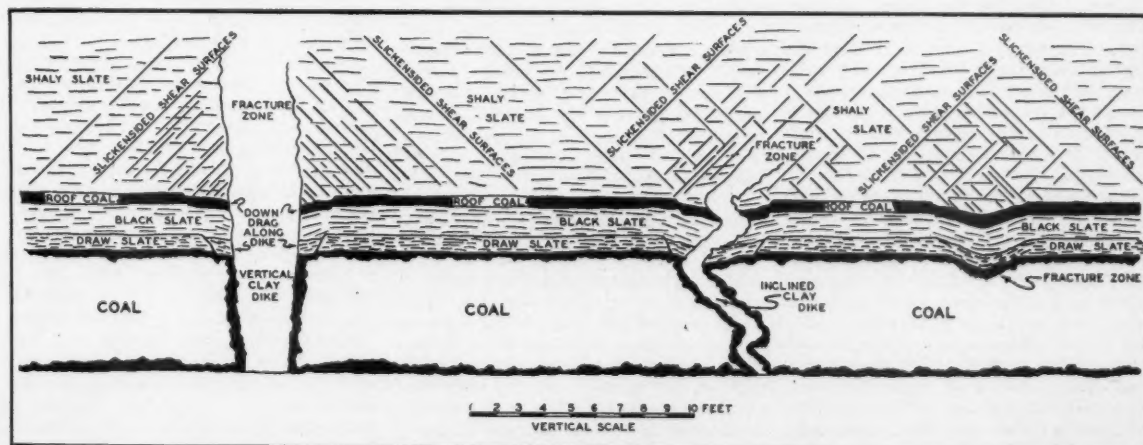
fracture zones with clay dikes crossing each other, and was partially supported.

A hundred ft. of excellent painted section followed. One fracture zone crossed this section and was intact. The only oxidation noted was in the lower 18 in. of coal. The next 100 ft. of roof was unpainted, and contained a fracture zone that crossed it, haulage No. 2, the connecting entry, and extended along the cross entry to the shaft. In the entry to the shaft, the roof had fallen to a height of about 30 ft. and was supported.

The 100 ft. of painted roof beyond this fracture zone was excellent, also 300 ft. of the 45 degree cut off and 350 ft. of the parallel opening just north of haulage No. 1. This was the largest area inspected not traversed by a fracture zone. Only occasional oxidation was in evidence. The Bureau of Mines roof sample No. 1* was collected in this area as shown on the map.

Intermittent falls occurred along the remainder of the painted section of haulage No. 1. Oxidation was much

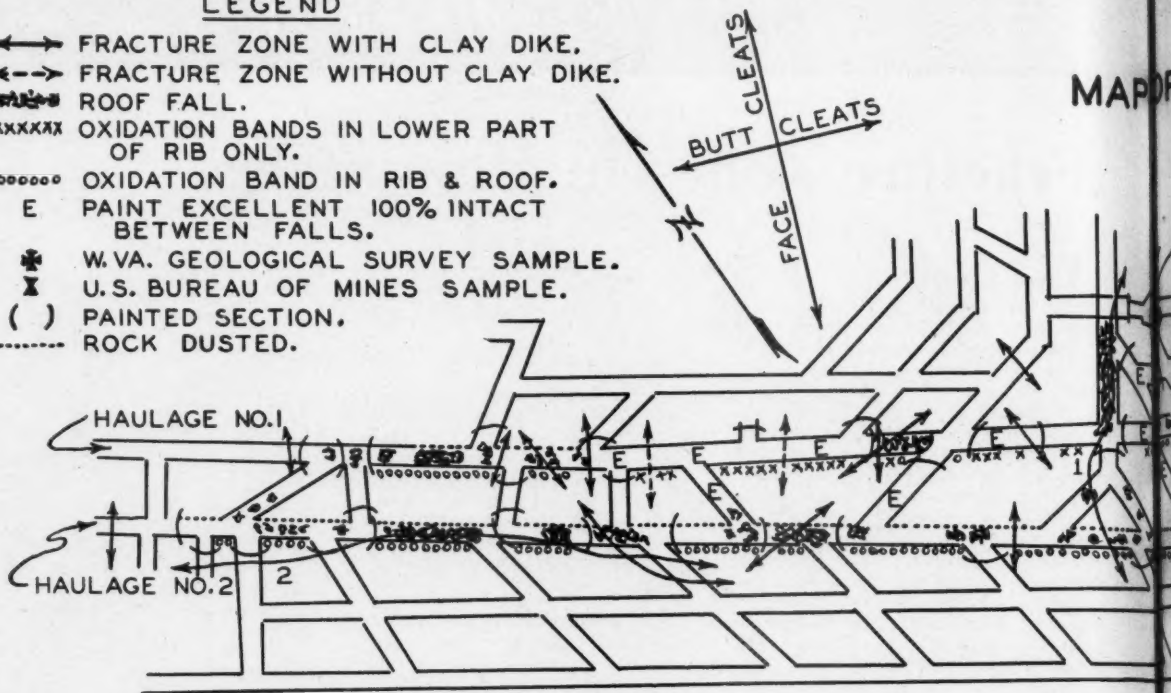
* See committee report by H. P. Greenwald, February, 1944, MINING CONGRESS JOURNAL.



Diagrammatic sketch of roof conditions above clay dikes

LEGEND

- ↔ FRACTURE ZONE WITH CLAY DIKE.
- ↔ FRACTURE ZONE WITHOUT CLAY DIKE.
- XXXXX ROOF FALL.
- XXXXXX OXIDATION BANDS IN LOWER PART OF RIB ONLY.
- OOOOO OXIDATION BAND IN RIB & ROOF.
- E PAINT EXCELLENT 100% INTACT BETWEEN FALLS.
- ✱ W.VA. GEOLOGICAL SURVEY SAMPLE.
- ✱ U.S. BUREAU OF MINES SAMPLE.
- () PAINTED SECTION.
- ROCK DUSTED.



in evidence and this section was rock-dusted. Several fracture zones cross the haulway. There is probably a fracture zone parallel to and close by this haulway.

Before inspecting haulage No. 2, we went to the working face. The working face of each of 3 parallel entries about 100 ft. apart was in a fracture zone. A drill hole in the roof coal in the first entry was making some water and a little gas. According to the mine superintendent, these were nearly always encountered in a fracture zone. The fractured roof was supported with timbers. In the third entry the roof in the center of the roll came down when the coal was shot. The usual 45 degree fractures, approaching the center of the roll from each side, were present and the face of the fractures was slickensided.

A fracture zone crosses the eastern end of the painted section of haulage No. 2. The first 100 ft. has four large patches fallen. The next 400 ft. is excellent, has no fracture zones in evidence, and has about average evidence of oxidation. Two fracture zones across the haulway in the next 100 ft. and a few large patches have fallen off. The next 225 ft. have several large fallen patches; then there is a section of 250 ft. that is very good with only two small patches which have come down. The next 200 ft. has a fracture zone running parallel to the haulage way and in the roof and the roof is all falling.

The next 800 ft. of painted section is fair with only an occasional thin piece of rather large area fallen; two fracture zones cross this section. The next 100 ft. has a fracture zone crossing it at a 45 degree angle and the roof of course is bad. The next 100 ft. of paint is good except the end next the fracture zone just mentioned.

A fracture zone crosses the haulway at 45 degree angle and then a parallel fracture zone enters the roof in the next 200 ft. with bad roof conditions. The parallel fracture zone follows the haulage for 500 ft. with many roof falls, but the out-by end section of paint in Haulage No. 2 is good with no fracture zones. This haulway is rock-dusted for about three-fourths of its length at the western end. There may be more of the rock-dusted area than that shown on the map. Some rock-dusted paint held and some fell.

Some Conclusions from the Inspection

The map accompanying this report was made by visual inspection of a work map of the painted section at the actual location in the mine; therefore it gives the approximate location of the objects and phenomena enumerated above and one can make the following statements with regard to the paint job with a fair degree of accuracy.

(a) Where the painted roof had all fallen, the oxidation bands were profusely present in roof and coal.

(b) Evidence of oxidation in the roof and upper part of the rib was at a minimum in areas where the paint held.

(c) Where fracture zones were present, usually all the roof had falls and away from them the falls became less frequent; in areas where fracture zones were absent or very small, there were no falls.

(d) The intensity of the fracture influenced the amount of fall.

(e) Fracture zones parallel with the entry caused the most damage (see zone Nos. 1, 2, 3, and 4).

(f) The size of the clay dike and the vertical displacement might be an index of the size of the fracture zone.

Fracture zone Nos. 2 and 3 parallel the lower haulway for long distances and possibly connect. Many checkered fractures occur in this section, some as small as 1 in. in area. Oxidation bands are quite pronounced in roof and rib.

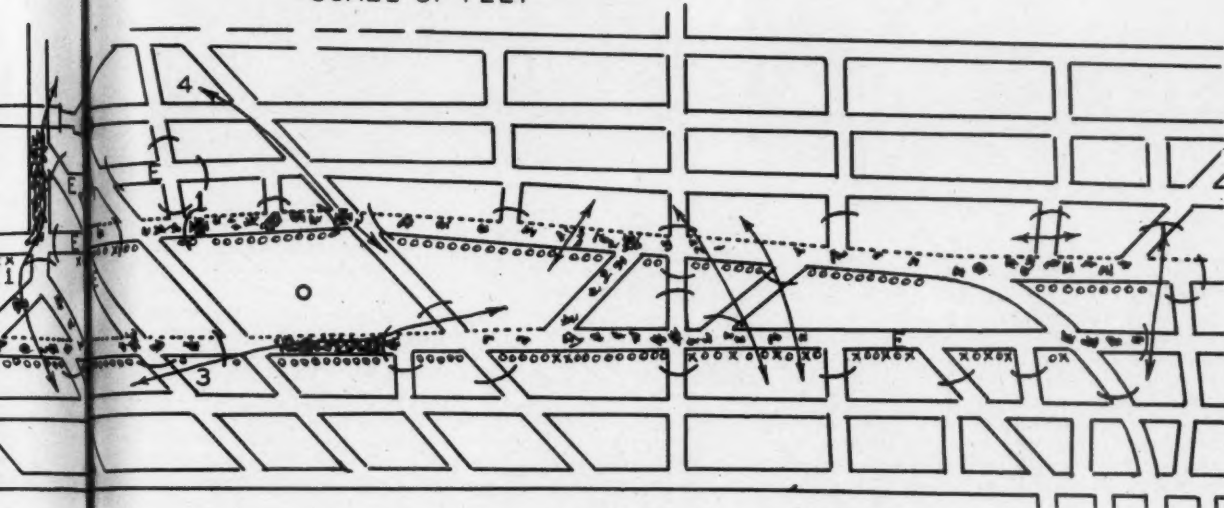
Twenty-one fracture zones were charted in the 38,000 sq. ft. painted area and crossed the entries 38 times.

These zones were charted by inspection and some probably exist that were not observed, especially in the crosscuts.

The roof is unstable in the painted area around the fracture zones. Water and gas are frequently found in

MAP OF ROOF SEALING PROJECT

100 0 100 200
SCALE OF FEET



them and it is likely that the porosity and permeability necessary for the occurrence of water and gas is in the fracture system as shales are very tight and usually show porosity and permeability in the joints only. The fact that evidence of oxidation is more pronounced in and near the zones may be due to water being able to permeate the fractures, dissolve, and remove to the surface readily oxidizable material; also oxygen can enter the fractured rock more easily than rock not fractured. Thus evidence of oxidation may be coincidental with but not necessarily a major cause of these roof falls. Much evidence of oxidation may be an indication of ease of oxidation through fractures and not the presence of greater quantities of oxidizable material.

The fact that considerable water and gas come from the rolls is evidence of porosity and permeability. It might be advisable to grout these rolls as they are encountered in the mining operation, following this by a paint coat to prevent surface weathering.

Geology of the Fracture Zones

The "fracture zones" are linear zones of inclined fracturing, resulting in many cracks along which the roof rocks are much slickensided and in most cases some of the roof rock has been displaced into the joints of the coal forming clay dikes. Local faults of small displacement were seen in a

few places in the disturbed rocks of the zones and more detailed study might show them to be a common feature. These faults were not observed to result in any displacement of the main coal seam, but are related to the pushing of the roof shale down into cracks in the coal, resulting in the formation of clay dikes.

In the part of the mine examined the worst roof conditions are invariably in close association with the clay dikes. These dikes occur in the coal in a nearly vertical position and vary in width from about three ft. down to a very small size. The small ones (less than 6 in. in width) are called "spars" by the miners. Although commonly called clay, the material in these dikes is really a well consolidated clayey material traversed by fine cracks which cause it to break out into small pieces the surfaces of which are covered with slickensides. It is apparent that the material in these dikes has been pushed down from the roof shales as in some places fragments of the roof coals are included in the dikes. Several small faults were seen in the roof rocks along the margins of the dikes within a foot or two above the top of the main coal seam. In the mine roof above the clay dikes and for about 10 ft. on each side, there are inclined shear cracks along which the roof rocks are slickensided. These result in bad roof conditions with fallings of the roof to heights of about 15 ft. above the top

of the coal in some instances. A few of these slickensided surfaces were observed in the roof where no clay dike was known to be close, but such occurrences are not common.

Clay dikes in the Redstone Coal are similar to those in this mine as the following quotation from Dr. Price shows:

"In all places where the source of the clay filling the fissure could be definitely determined, it was found to come from the roof slate over the coal. Slickensides and down-drag prove the direction unmistakably. There is no reason, however, why they could not have entered from below if other conditions were favorable. The coal on either side of the clay dike is ordinarily sheared with one set of shear planes paralleling the clay dike and another set dipping in the opposite direction to form a set of conjugate shears. The angle of inclination of the shear planes is variable, but in many places it is 45 degrees, or the theoretical angle for planes of maximum shear in perfect bodies, the variation from this depending on the amount of friction, brittleness, or ductility. The clay commonly penetrates both sets of shear fractures, but it seems most common for the clay to enter one shear as the main lead. It may follow this fracture entirely across the coal, or it may, on encountering a cross fracture, force itself in any direction along these shears. It is for this reason



Vertical and inclined clay dikes in a coal seam (Paul H. Price)

that dikes which have the appearance of ending before entirely crossing the seam may, a few feet farther along its strike, attain either the top or bottom. The clay commonly penetrates the vertical butt and face joints, or it may penetrate between bedding planes in the coal. It is the latter characteristic that tends to give a very irregular appearance to the dike, although the original fracture may have been a clear-cut shear."

Most of the dikes in the painted section are the vertical type and a large percentage of them follow the butt and face joints as shown on the map. By mapping in detail the position and direction of the fracture zones and clay dikes throughout the mine workings it would probably be found that they have some approximation to regularity of orientation which would make it possible to predict about where they would be found in extending the mine workings.

Character and Causes of the Roof Falls

Away from the clay dikes the roof shales have much less tendency to fall and the pieces which had fallen were generally thin plates or slabs split off along bedding planes. The carbonaceous shales of the roof are far from homogenous and the bedding is irregular in many places. Large plant fossils flattened out parallel to the bedding planes of the shale are common. In addition to the inherent weakness of the rock itself all of these factors favor falling of pieces from the roof.

Evidences of weathering in the roof consist of many fine and irregular cracks across the bedding planes and some limonite stains and gypsum crystals which are mostly along the bedding planes. The limonite and gypsum are believed to result from the oxidation of pyrite in the roof shales and associated coals. Such evidences

of oxidation are by no means present in all places where pieces of the roof have been falling along bedding planes, nor are they especially abundant even where present in the roof. The amount of pyrite in the roof of this mine is not large and it appears that its weathering is likely to be only a minor factor contributing to bad roof conditions. There are some indications that there is more oxidation in the roof shale near the clay dikes.

This test area is affected by all of the major causes of roof falls, and since the roof is mechanically weak the causes do not have to be very strong to produce bad roof conditions. The fracture zones are such that some type of roof support is necessary to prevent falls in these strongly fractured areas. After it is supported, painting might prevent some spalling above supports. Experience only would show how far from the center of the fracture it would be necessary to add support; away from this center weathering is splitting off many of the rocks that fall, so there is an area in which sealing will prevent the falls. The paint is holding the roof quite well where weathering is the major cause of falls. The readily oxidizable minerals become less and less in the roof and top coal until they show stains only in the bottom of the coal. In this area the hydration effects of moisture are probably the major cause of the falls, and the paint has held up practically 100%.

One must recognize the fact that all causes of roof falls are ever present in varying degrees of intensity, although one or possibly two causes may account for 95 percent of the energy necessary to break down the roof at any one point. The structural strength of the roof is an index of the energy necessary to cause this breakdown. The intensity of the forces which cause roof falls will vary with change in roof composition and properties from place to place. Two

major causes may exist within a few feet of each other and gradually blend in the area between them. The use of a combination of measures for the prevention of roof falls will produce successful results in some areas in which either one would fail. If the fractures could be cemented in the strongly fractured zones, possibly by some grouting method, then sealing with paint would complete the project.

It now seems apparent that the first step in a project to control roof action is to accurately and competently map the geology of the roof area, then install the proper preventive method or combination of methods based on this geology, backed with physical tests on the roof rock.

Previous reports by the committee on this project:

- (a) MINING CONGRESS JOURNAL, "Mine Roof Sealing to Prevent Slate Falls," April, 1943. Also *Coal Mine Modernization Yearbook*, 1943.
 - (b) Smith, Frank G., "Saving Labor by Preventing Roof Falls," *Coal Mine Modernization Yearbook*, 1943.
 - (c) Greenwald, H. P., MINING CONGRESS JOURNAL, March, 1943.
- Price, Paul H., "Clay Dikes in Redstone Coal, West Virginia and Pennsylvania," *Bull. Amer. Assoc. Pet. Geologists*, Vol. 17, No. 12, pp. 1527-33, Dec. 19, 1933.

The committee respectfully acknowledges the assistance of Dr. J. H. C. Martens, mineralogist, West Virginia Geological Survey, who visited the project and aided with the preparation of the manuscript, and Charles E. Hare, who prepared the drawings. Especially are thanks due the coal company officials, who so kindly furnished data and accompanied us on inspection trips.



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Wheels of Government

As Viewed by A. W. Dickinson of the American Mining Congress

KEENLY conscious of the critical attitude in the home States and districts and with an ever-watchful eye on the political campaign and the Fall elections, members of Congress recessed from April 1 to April 12 to spend as much time as possible with the voters whom they represent before the party conventions begin in June.

A lull in the almost open warfare between the Administration and the Congress has followed the Barkley revolt of late February when the Revenue Bill of 1943 became law by the overriding of the President's veto. The Congress has remained poised and watchful and is openly jealous of its legislative prerogatives, but also apparently willing to enact such bills as are necessary for the proper functioning of the Government in the present emergency.

Tax Moves

Shortly after mid-April the House is expected to approve and send to the Senate the Ways and Means Committee's tax simplification bill, which combines the present normal tax and surtax into a single surtax beginning with a 20 percent rate on the first \$2,000 of individual income. Provided is a uniform exemption of \$500 for single persons, \$1,000 for married couples, and \$500 for each dependent. The Victory tax is replaced by a new normal tax of 3 percent on all income above a tax exemption of \$500, regardless of marital status or dependents. For all income up to \$5,000 there is provided a standard deduction allowance of 10 percent of income, with an allowance of \$500 to apply on higher incomes. Also included is a new simplified tax table for taxpayers with incomes below \$5,000.

A modification is made in the present withholding tax system so that the full tax liability may be withheld for wages up to \$5,000. The comment is made that by this means approximately 30 million wage and salaried

Washington Highlights

CONGRESS: Closely scrutinizes Administration legislative moves.

TAX SIMPLIFICATION: Enactment of a bill expected by mid-June.

DEMOBILIZATION: Immediate legislation may be limited to contract terminations law.

STOCKPILING: Army and Navy desire to retain control of stockpiles.

MANPOWER: Selective Service State Directors consider appeals on deferments.

ANTHRACITE CONTRACT: Ickes urges WLB to approve new agreement.

STEEL WAGES: WLB standing on Little Steel formula.

SUPREME COURT: Approves portal-to-portal pay in Alabama iron mines.

taxpayers will find it unnecessary to file returns and that a gratifying simplification will be achieved in the returns of all others.

In commending the work of the Ways and Means Committee on the bill, Chairman George of the Senate Finance Committee has stated the Senate will probably modify the requirement for quarterly estimate on future income because of the difficulty encountered at present by taxpayers whose incomes are fluctuating and uncertain.

Resignation of Treasury General Counsel Randolph Paul apparently confirms the general belief that there will be no consideration of an administrative provisions bill to correct inequities in the income tax structure during the present congressional session.

Contract Renegotiation

Five sections of the Renegotiation law recently revised by the Revenue Act of 1943 have been the subject of interpretations by the War Contract Price Adjustment Board. Effecting exemptions under the act, these interpretations apply to cases involving aggregate volume of annual war contracts of \$500,000 or less, standard commercial articles, competitive bidding, construction contracts, and claims for refunds or credits arising as a result of profits on excess inventories of certain types of exempted products. Under the aggregate volume provision the Board has ruled that no determination of excessive profits shall be made in an amount so great that when deducted from the aggregate amount of contracts, it will reduce the total below \$500,000.

At the discretion of the Board, the exemption of standard commercial articles is made on the basis of articles, types or classes, where competitive conditions have been such as reasonably to protect the Government against excessive prices, and on the basis of broad national conditions and considerations.

Demobilization

The problem posed by the Baruch-Hancock report of February 18 on "War and Post-War Adjustment Policies" and the George-Murray bill to create an Office of Demobilization and set up procedures for contract terminations and surplus disposal has become puzzling and controversial. Despite the President's executive orders the Congress desires that the problems of demobilization be covered by authorizing legislation, and a number of interests, including those of labor, are involved in the situation. The general feeling in Congress appears to have come around to the resolve to enact a contract terminations law before the latter part of June and to defer specific legislation on the re-employment of war veterans and civil-

ians and the disposal of the greater portion of surplus commodities until a later date. There is also discussion of the preparation of a bill by John Hancock, Baruch associate, on contract terminations which can quite naturally be expected to represent the views of the White House and Baruch.

Surpluses and Stockpiling

Stockpiling of strategic and critical metals and minerals for the defense of this country in any future emergency and the immediate freezing of surplus Government stocks, including returned scrap and secondary material, at the end of the war, are receiving increasing attention from industry and Government sources as the days and weeks pass. Mining men in general feel that Government stocks of metals and minerals, including scrap and secondary material, should be definitely excluded from the category of "surplus," and should be held as part of a permanent stockpile reserve for future national security.

Still under consideration in the Senate Mines and Mining Subcommittee is the Scrugham Bill, S. 1582, and it is known that the Army and Navy, and the State and Interior Departments have stockpiling legislation very definitely in mind but have not, up to the present time, been able to reach agreement on the form of a bill. As in past purchases of strategic and critical metals and minerals under the bill sponsored by Senator Elbert Thomas of Utah in 1939, the Army and Navy undoubtedly desire to control the handling of the material and while it is hoped that the solution of the situation may be forthcoming at an early date, the problem is undeniably complex.

William L. Clayton, who holds the office of Surplus Property Administrator created by executive order, recently testified before the House Committee on Banking and Currency that surplus property held by war agencies should be disposed of immediately, and that he has asked the War and Navy Departments to report all surpluses which can be disposed of now.

As this whole situation is of immediate importance to the mining industry, the personnel of the Senate Committee on Mines and Mining is presented herewith: Joseph E. Guffey, Pennsylvania; Elbert Thomas, Utah; Edwin C. Johnson, Colorado; Albert B. Chandler, Kentucky; Mon C. Wallgren, Washington; Harley M. Kilgore, West Virginia; Burnet R. Maybank, South Carolina; and James G. Scrugham, Nevada—Democrats; and James J. Davis, Pennsylvania; Clyde M. Reed, Kansas; E. D. Millikin, Colorado; Chapman Revercomb, West Virginia; Edward V. Robertson, Wyoming—Republicans.

The Draft Tightens

The President's communication to Selective Service Director Hershey on February 26, calling for immediate review of deferments of all men of military age, with particular attention to registrants under 26 years, started a wave of indiscriminate cancellations of draft deferments in key war industries on the part of local boards. Prompted by this serious situation, WPB Chairman Donald Nelson and WMC Chairman McNutt conferred with the President, with the result that Selective Service placed control on draft deferments for men up to 26 in the hands of State Selective Service Directors, with instructions that they pass upon the deferment of all industrial workers from 18 to 25 years of age, and with deferment to be recommended only for those most needed in critical industries.

Immediately created was a Government inter-departmental committee under Commissioner McNutt consisting of representatives of the War and Navy Departments, Maritime Commission, War Production Board, Office of Defense Transportation, War Food Administration, War Shipping Administration, Petroleum Administration for War, Solid Fuels Administration and the Office of the Rubber Director.

General Hershey has set up five rules for his State directors to follow in inducting men in the 22 to 26 age group: (1) the agencies represented on the special WMC committee are authorized to designate representatives in each State to endorse special

requests for deferment of key registrants in war activities other than agriculture, and employed in establishments coming within their jurisdiction; (2) State Directors are ordered to call up for pre-induction physical examination all registrants occupationally deferred in Class 2-A (in support of the war effort), and in 2-B (directly in war production), providing such registrants have not been physically examined within the last 90 days; (3) classification of all registrants in Class 3-A (pre-Pearl Harbor fathers), Classes 2-A, 2-B, 2-C (non-father agricultural deferment) and 3-C (fathers in the agricultural status) are all to be reviewed before reconsideration of registrants in the 26-37 age group; (4) review of the cases of all registrants in Classes 3-A, 2-A, 2-B and 3-C is to be made without regard as to whether their existing deferments have expired and reclassification is to be made without regard to deferment termination dates, if warranted; (5) upon receipt of proper information local boards may place in Class 2-A or 2-B registrants who have been found upon examination to be fit for limited military service only, or 4-F, providing they are contributing to war production or war supporting activities.

Lists of critical activities are expected to issue from the WMC inter-agency committee. Arthur H. Bunker, WPB Vice Chairman for Metals and Minerals, and Charles Potter, Deputy Solid Fuels Administrator, are participating in the committee conferences.

STRICTLY BUSINESS

Washington Daily News.



"Our profit before taxes amounted to \$14,230,000—after taxes, we transferred it to the petty cash account."

Anthracite Wage Contract

Early in March operators and miners of the anthracite region submitted to the War Labor Board a new wage agreement which would terminate April 30, 1945, and be retroactive to November 3, 1943, the date of the Ickes-Lewis Agreement. Basically the contract submitted follows that under which the mines have been operating since November, and Interior Secretary Ickes has sent a strong communication to the War Labor Board urging that the Board approve the instrument.

Under the contract wages will be increased 32.2 cents per day, plus 37.8 cents per day for the surrender of the 15-minute lunch period. The pyramiding of premium rates for work during any one week is eliminated and time and one-half is provided for all hours in excess of 40, with double time for Sunday. Significant also is the included statement that if at any time a change occurs in the Government wage policy either party shall have the right to request negotiation on general wage rates.

To date there has been no indication of any action on the part of WLB to approve the wage contract agreed to by a large number of bituminous operators and the UMWA.

Steel Employees Demand

Designated by the Department of Commerce as the "most serious of the pressures" on the inflation front, the demands of the nation's steel workers for a 17c per hour increase plus further costly working conditions provisions have been the subject of hearings before a WLB panel. Board Chairman William H. Davis, in testifying before the Senate Banking and Currency Committee on the Price Control Act, has reaffirmed the intention of WLB to stand firmly upon the Little Steel formula. Incidentally he stated that the Little Steel formula would have to be abandoned if Congress should abolish consumer food subsidies with resultant increases in living costs.

Appearing before the Board panel, CIO Philip Murray, in addition to the wage demands, asked for a guaranteed annual wage, sick leave, dismissal pay, geographical differentials, vacations, rate adjustments and an industry-union joint fund to pay a bonus to returning soldiers; he devoted much time to a discussion of the financial situation of steel producers and the effect of the "carry-back" provisions in the revenue laws. Testimony of steel company representatives is to begin before the panel on April 18.

Portal-to-Portal

On March 28, in the Alabama iron ore mines portal-to-portal travel time case, the Supreme Court ruled that

underground travel time in these mines constitutes working time and must be paid for under the Fair Labor Standards Act of 1938. Chief Justice Harlan F. Stone and Justice Owen J. Roberts dissented. From October 24, 1938, to May 5, 1941, when the companies began compliance with the ruling of Wage-Hour Administrator Philip Fleming, workmen in the mines affected may recover for travel time. The companies joining in the petitions for a declaratory judgment were the Tennessee Coal, Iron and Railroad Company, Sloss-Sheffield Steel & Iron Company and Republic Steel Corporation.

President Edward R. Burke of the Southern Coal Producers Association, pointing out that a different set of facts exists in the Jewell Ridge coal case, involving the question of travel time pay in coal mines, immediately noted that the Supreme Court has in the past uniformly held that although an administrative ruling does not have the force of law, it is "entitled to great weight." He quotes the Court as saying in a typical case that "this is peculiarly true . . . where the interpretation involved 'contemporaneous constructions of a statute by the men charged with the responsibility of setting its machinery in motion, of making the parts work efficiently and smoothly while they are yet untried and new.'"

Burke then cited that on July 27, 1940, the Wage-Hour Administrator, acting on a joint request (the Houck letter) from coal operators and United Mine Workers, ruled that the "face to face" method of computing pay in bituminous coal mines was a proper method under the Fair Labor Standards Act. He pointed out that nearly a year later, March 23, 1941, the Wage-Hour Administrator issued what he called a "modified portal-to-portal" ruling, in which he found that a different rule should apply to iron ore mines. Burke stated that the Administrator intervened in the iron ore case and participated therein in support of his ruling all the way to the Supreme Court, but that although he was invited to intervene in the coal case he declined to do so.

In analyzing the concurring opinion of Justice Jackson, Burke called attention to the Justice's expression concerning the rulings of the two lower courts in the iron ore case when he said, "a seasoned and wise rule of this Court makes concurrent findings of two courts below final in the absence of very exceptional showing of error." Burke then cited Federal District Judge Barksdale's decision of January 25, 1944, in the Jewell Ridge coal case, wherein the Judge found that (a) the time spent in travel to and from the portal involved no work or labor, that it is "neither painful nor unduly uncomfortable, and is less haz-

ardous than other phases of mining operations"; (b) that by universal custom extending back more than 50 years "travel time has never been considered as, or included in, work time by anyone in the bituminous coal industry in this country . . . the 'face to face' basis has been universally recognized in the bituminous coal industry as the basis for the computation of work time"; (c) that this has been the standard provision of basic wage agreements in the industry for 50 years and is the result of free collective bargaining in the fullest sense, in which negotiations the miners were at all times represented by a strong and powerful union. Burke then pointed out that the majority opinion in the iron ore case contains the statement that the conclusion would necessarily be different in a case in which the "facts give rise to serious doubts as to whether certain activity or non-activity constitutes work or employment." The opinion states that in such a case "reasonable provisions of contract or custom governing the computation of work hours" would not be foreclosed.


In further comparing the Jewell Ridge coal case with the iron ore case, Burke states that when the coal case reaches the Supreme Court, the Court will find that there has been no dominance of the unions by the employers.

New Order

In a move to facilitate purchasing procedure and to eliminate approximately 28,000 applications filed annually by mines, the War Production Board has issued a revision of Order P-56, covering all mines and smelters, to establish a quantity quota system for maintenance, repair and operating supplies, based on the corresponding quarters of 1943.


The amended order sets a quota for each quarter at the rate of 120 percent of each mine's or smelter's aggregate expenditures for such supplies during the corresponding calendar quarters of 1943. Domestic mines and smelters holding serial numbers assigned under the provisions of the order are assigned ratings of AA-1 for maintenance, repair and operating supplies, other than controlled materials; the allotment symbol S-7 is assigned for controlled materials for such supplies. Non-serialized domestic producers, other than gold mines covered by Order L-208, are assigned S-7 allotment numbers for controlled materials and a rating of AA-5 for other items.

All mines and smelters will continue to make application for new machinery and equipment on Form SPB-1319 in accordance with the WPB-1319 instruction manual. Also, non-serialized domestic producers wishing to apply for higher ratings on minor capital additions will now use Form WPB-1319.



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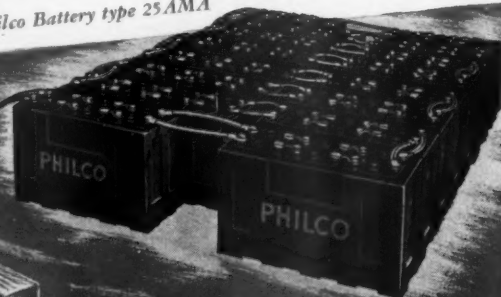
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PERSONALS..

C. C. Dovey of Johnstown, president of the Cambria Fuel Co., was recently elected president of the Somerset County Coal Producers Association at the annual dinner-meeting held at the Somerset Country Club. Martin Markel was reelected secretary. Other officers elected are E. A. Siemon, Pittsburgh, of the Hillman Coal & Coke Co., vice president, and Howard R. Reed, Somerset, Brothersvalley Coal Co., reelected treasurer.

Jack W. Still has resigned as general manager of the Bagdad Copper Corporation at Hillside, Ariz. C. Q. Schlereth has assumed Mr. Still's duties. Mr. Still had worked for Calumet & Arizona Mining Co., Central Copper Co., and Miami Copper Co. prior to 1930, when he became mine superintendent with Bagdad. Later he was assistant manager of the Eagle Bird mine in Washington, Calif., later going to the Benguet Consolidated Mining Co. in the Philippines. He has been general manager at Bagdad since August, 1937.

Russell S. Poor, who is now head of the division of natural science at Birmingham-Southern College, and administrative assistant at that college, has been appointed dean of the graduate school and director of the research council of Alabama Polytechnic Institute. His appointment will be effective in June, 1944.

Edward Pesout has become smelter superintendent for the Kennecott Copper Corp.'s Nevada Mines Division at McGill. He was formerly assistant smelter superintendent at the McGill plant.

Harry J. O'Carroll has become assistant smelter superintendent at the Nevada Mines Division of the Kennecott Copper Corp. at McGill, Nev.

E. V. Dangerfield, of the Peabody Coal Co., is now general superintendent of the Majestic mine, near Duquoin, Ill.

Dan Coupal has resigned as Director of Arizona State Department of Mineral Resources. Governor Sidney Osborn has reappointed Dr. Norman H. Morrison of Phoenix and Lloyd C. Edmonson of Globe holds over. New

appointments are H. S. Mills of Humboldt, J. E. Laten of Chloride and W. E. Humphries of Patagonia, all active mine operators. Chairman Charles S. Willis of Phoenix has retired. Coupal has served as a Director of the Department since it was set up in 1938 and is leaving to act as Managerial Consultant for several Arizona mines.

Marvin E. Johnson of Coleraine, Minn., has been appointed assistant superintendent of the Gross-Marble and Arcturus mines of the Oliver Iron Mining Company in the Canisteo district of the Mesabi range. He graduated from the University of Minnesota in 1932 and has been with the Oliver company for seven years.

At a recent dinner meeting of foremen and officials of the Safety Department of the Isabella mine of the Weirton Coal Company, John J. Komara, a foreman, received highest honors for the best safety record during 1943. He was presented with a fine watch appropriately engraved to commemorate the occasion.

Howard C. Renken has been named to the research staff of Battelle Institute, Columbus, Ohio, and assigned to its division of mineral dressing research. Mr. Renken, who has been associated with the extraction metallurgy and smelting industry nearly a score of years, was graduated from the Colorado School of Mines in 1925. From 1925 to 1942, he held engineering positions in various plants of the American Smelting and Refining Co. Immediately prior to his appointment to Battelle he was associated with the Stauffer Chemical Co., San Francisco, Calif.

Edgar Dale, who has been superintendent of Nos. 1, 2, 3, and 4 mines of the Elk Horn Coal Corp., Fleming, Ky., is now assistant general superintendent, with headquarters at Wayland, Ky.

J. Kent Geyer, formerly area distribution manager of the Solid Fuels Administration at Altoona, has been designated to act both in that capacity and as regional bituminous coal mine manager for the Coal Mines Administration. Don C. Gingery, formerly manager of the Altoona office of the

Bituminous Coal Division, and later regional bituminous coal mine manager at Altoona, has been designated as associate area distribution manager and associate regional bituminous coal mine manager. Mr. Geyer will concentrate upon distribution problems, while Mr. Gingery will devote most of his activities to matters pertaining to federal possession of the coal mines.

John C. Kinnear, Jr., has become assistant smelter superintendent for the Chino Mines Division of the Kennecott Copper Corp. at Hurley, N. Mex.

J. S. Hazen is now manager of the mining drill division of the Worthington Pump & Machinery Corp. He was formerly manager of the rock drill sales division of the Chicago Pneumatic Tool Co.

W. W. Lynch has left his position with the Metals Reserve Co. of Washington, D. C., and is on the staff of Calumet & Hecla Consolidated Copper Co. as New York representative.

Doren Sutton has been named to succeed Elmer Tomkinson as mine superintendent for the Bagdad Copper Corp., Hillside, Ariz.

Alvis Mercer, formerly superintendent of the Tierney mine, Stone, Ky., has become superintendent of mines of the Fleming Division of the Elk Horn Coal Corp., Fleming, Ky. He fills a vacancy caused by the death of I. S. Ramsey on December 20.

The Office of Solid Fuels Administration for War has appointed O. L. Alexander, president of Pocahontas Fuel Co., to membership on its tide-water dock coal advisory committee.

W. S. Long, formerly operations manager of the United States Rubber Co.'s Los Angeles plant, has been appointed Pacific Coast sales manager, mechanical goods, it was announced by W. H. Cobb, general manager of the mechanical goods division. Mr. Long will continue in charge of war products activities on the Pacific Coast.

Edward J. Dormer, chief accountant of the Ebensburg Coal Co., Philadelphia, has been elected to membership in the Controllers Institute of America. The Institute is a technical and professional organization of controllers devoted to improvement of controllership procedure. Also recently elected to membership was Roy T. Omundson, comptroller of the Cardox Corporation of Chicago.

H. M. Pickering, superintendent for the Oliver Iron Mining Co., Hibbing, Minn., was named a vice president of the Minnesota Federation of Engineering Societies at a recent convention in St. Paul.

— Obituaries —

John D. Rogers, vice president of Stonega Coke & Coal Co., died March 24. He was a native of Long Island and graduated from Lehigh University. He served for several terms as president of the Virginia Coal Operators Association and had been with the Stonega Coke & Coal Co. for 23 years.

Cecil James Moe, superintendent for Pickands Mather Co., at the Corsica mine, Elcor, Minn., died recently at his home following a heart attack. He was born January 17, 1901, at Hawthorne, Wis., later lived at Winton, Minn., and attended the University of Minnesota School of Mines, where he graduated in 1924. He began his duties as mining engineer at Elcor in April, 1926.

John L. Kemmerer, coal operator and corporation official, died March 3 at his home in Short Hills, N. J. He was 74. He was chairman of the boards of Whitney & Kemmerer, Inc.; the Kemmerer Coal Co.; the First National Bank of Kemmerer, Wyo.; the First National Bank of Norton, Va.; and the Titan Metal Manufacturing Co., of Bellefont, Pa.

He was a director of the Newmont Mining Co., West Virginia Coal & Coke Co., the Lehigh & Wilkes-Barre Corp., and other companies. His family had been interested in coal mining for several generations and Kemmerer, Wyo., was named after it.

Berthol Guy Sweet, former treasurer and purchasing agent of Combined Metals Reduction Co. until 1942, and recently of the home office of the St. Louis Smelting & Refining Co., died March 13 at Webster Groves, Mo. He was born in Jefferson County, Mo., September 7, 1885, and lived in Tootle, Utah, from 1926 to 1942. He was active in community affairs and was general director of the Tootle Tunnel Day's celebration in 1939.

L. H. Smith, general manager, Nokomis Coal Co., Hillsboro, Ill., died February 14. He was formerly general manager of the Spring Valley Coal Co.

Edward Thomas, 68, consulting mining engineer, long prominent in the anthracite industry, died January 31 in Shamokin, Pa.

A. D. W. Smith, 79, at one time head of the North-East Coal Co., with operations at Thealka and Auxier, Ky., and formerly president of the South-East Coal Co., operating at Seco and Millstone, Ky., died at Philadelphia on February 7.

Henry Andrew Buehler

AN APPRECIATION BY
R. C. ALLEN

Henry Andrew Buehler, State Geologist of Missouri, passed away Tuesday morning, March 14, 1944, at Jefferson City, Mo., where he was in attendance at a meeting of the Missouri Road Commission. He died as he wished to die, in full discharge of his official duties to the end. It was characteristic of him that he wished to be laid away in his final resting place, casually, by a group of his closest friends. But his close friends were legion, and it taxed the capacity of Parker Hall, of the Missouri School of Mines, to hold the number of them who came from everywhere in Missouri, and many localities throughout the country, to join in the simple services there on March 16.

This man was not only respected and honored by everyone who knew him, he was beloved of them. Even the little children of Rolla searched the countryside for the early wild flowers and worked them into a beautiful floral tribute to their friend, "The Chief." It is fitting that the body of Dr. Buehler shall rest in Rolla in the hills of the Ozarks, which he knew and loved so well, in the central scene of his selfless labor for the people of Missouri over a period of 43 years.

He was born at Monroe, Wisconsin, May 27, 1876. After receiving his Bachelor of Science degree at the University of Wisconsin in 1907, Dr. Buehler went to Rolla as an assistant to Dr. E. R. Buckley, then state geologist, and 8 years later became his successor by appointment of Governor Folk. Thereafter his appointment was confirmed by 10 successive governors of the State of Missouri. Inclusive of these is Governor Forrest C. Donnel, who spoke fittingly, at the services, of the debt and gratitude which the people of the state acknowledge to their noble servant for the fruits of his lifelong service to them.

The contributions of Dr. Buehler to the progress of geology in his time, and his services to the learned societies of which he was a member, which include the Geological Society of America, American Institute of Mining and Metallurgical Engineers, American Association of State Geologists, and others, will be recorded

elsewhere, and by other hands. But, to the members of the American Mining Congress, I desire to speak of him as my friend and your friend. We shall remember him for his contributions to the mineral industry, to the science of geology, and to the learned societies of which he was a member; but we mourn his loss as a friend. It was the charity, simplicity, humbleness, kindness, humor, and generosity in this man that made everybody his friend and explains his unique career in Missouri, where as its best known and beloved citizen, he became an institution in himself.

Many a poor student in the School of Mines at Rolla shared in the comparatively meagre income of the beloved "Chief" and hosts of others drew their inspiration from his kindly advice and counsel. These men, now scattered all over the world, were the "Chief's" pride and joy, and I have been the witness of his concern over the occasional misfortunes, and his satisfaction arising from the good fortunes of these, his "boys."

"The Chief," as he was known in Missouri and in mining communities throughout the country, was my closest friend. To me he has been more than the "Chief" whom you all knew, more than Dr. Buehler the scientist, geologist, member of learned societies, administrator, *he was my friend*. I met him first in my late teens and maintained personal and professional contact with him of the closest kind, to the day of his death. I well remember his first marked kindness to me. I had come up to the University of Wisconsin to persuade an examining committee of professors to approve my enrollment as a freshman, overlooking the sketchiness of my preparation for college work.

"Ajax," a senior, came to the train to meet me, fed me and bedded me in his attic room during the several days of those examinations. He would have done as much for any other kid. To me, and his other friends of high school and college days, his name was "Ajax" and during all of the 35 years or more in which he and I have been in steady correspondence, his letters have been signed, "Ajax." And in some respects he was much like that figure of Greek mythology, the strong man of many virtues who fought with other heroes at the siege of Troy.

With the passing of "Ajax" a unique and fruitful life now ends. But to his friends "Ajax" leaves something more valuable than the product of his endeavor, learning and wisdom—he leaves to us an inspiration toward selfless living, charitable giving, friendly consideration, and humble devotion to the work of mind and heart in the service of one's fellowmen.

News and Views

Eastern



States

WEST VIRGINIA

»»» The meeting of the West Virginia State Safety Conference at Charleston, March 22-25, was of considerable interest to the coal industry. Planned to provide sessions for various industrial groups, the general arrangement gave the railroads, industrial utilities, mining, motor transportation, petroleum, enforcement, safety educational, manufacturers and jobbers, highway safety and fire prevention committees ample opportunity to present selected topics for discussions.

The ladies met on Friday evening, March 24, with Miss Winifred Newman, assistant superintendent of Kanawha County schools, presiding. This section presented addresses that reached into the home of Mr. and Mrs. America, the safety of women war workers, and the safety of the children they leave at home.

»»» The Office of Defense Transportation is displaying considerable interest in the wasted gas, tire and truck service delivering mine timber to mines in the Kanawha section. They have discovered instances where truckers from an area closely adjacent to a ready market are delivering as far away as 100 miles, while truckers located close by are delivering mine supplies at the other end of this haul. Cases have been brought to light where truck operators have petitioned for gas, tires, and even trucks to complete a contract for mine timber and, having received them, work on the contract for a short time and then divert their trucks to serv-

ices not related to the war effort. Associations are now cooperating with the ODT to correct the problem as much as possible.

»»» Kanawha Collieries, Inc., with chief works at Rumble, Boone County, has received charter as a \$400,000 mining concern with C. E. Runnion, Bownemont, and H. P. and A. O. Norton, South Charleston, as incorporators. This is a part of the property that was operated in the early twenties by the Brotherhood of Locomotive Engineers and was known as the Brotherhood No. 3 mine. Falling into a state of bankruptcy, the property reverted to the landowners who retained a considerable part of the working equipment in place. It will be several months before production can be resumed.

»»» Presentation of the Army-Navy "E" award to the Weirton Steel Co. took place recently. The "E" flag was presented by Lieut. Col. Robert C. Downie, chief of the Pittsburgh Ordnance District, and accepted by Thomas E. Millsop, president of Weirton, and William C. Paul and Robert Mayo, two oldest employees in point of service, for the employees.

William C. Lutes, employe and veteran of World War I, whose son, Robert G. Lutes, recently was reported missing in a bomber raid over Germany, raised the flag.

Capt. Leland P. Lovette, director of the Navy Office of Public Relations, presented lapel pins to representatives of management and employees.

PENNSYLVANIA

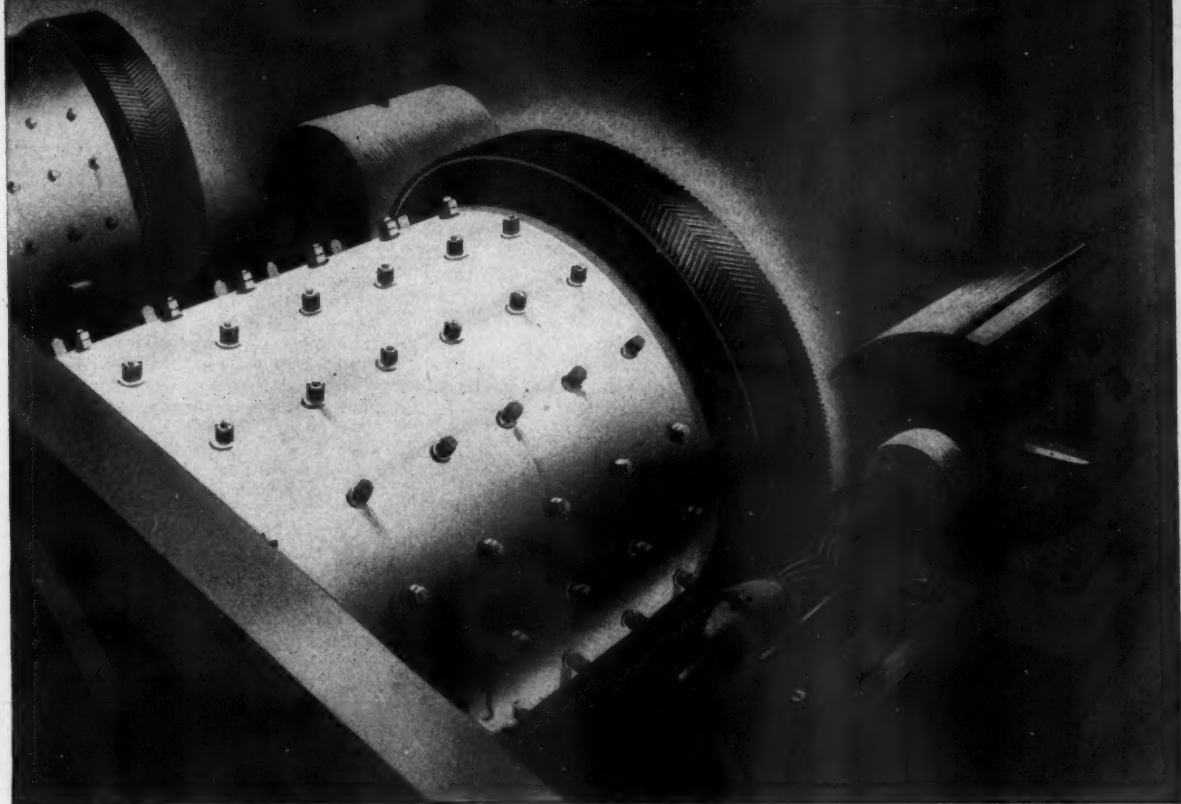
»»» Mine No. 17 of the Pennsylvania Coal & Coke Corporation won the safety banner for the month of February in competition with other mines of the Barnesboro Chapter, Joseph A. Holmes Safety Association. The award was announced at a meeting of the chapter at Barnesboro. The No. 17 mine had no accidents while producing 16,884 tons of coal during the month.

»»» For the purpose of preventing sub-standard anthracite from reaching the consumer, these coal-mining companies have been ordered to suspend shipments by the Solid Fuels Administration: Atkins Coal Company, Frackville; Hope Coal Company, Wyoming; and the Rubin Coal Corporation, Forest City.

»»» Provisions of the War Labor Disputes Act, the Smith-Connelly Anti-Strike Bill, were put into operation for the first time in the United States Middle District Court of Pennsylvania when Federal Judge Albert L. Watson issued bench warrants for the arrest of four officers of the Truesdale Colliery Local in Luzerne County. The defendants were charged as follows: "They did knowingly, willfully, and unlawfully coerce, instigate, induce and encourage the employes of said colliery to interfere by strike and other interruption with the operation of the colliery and mining facilities in divers manners." The action followed an investigation by the FBI concerning a strike at Truesdale Colliery of the Glen Alden Coal Company.

»»» The State Secretary of Mines, Richard Maize, shows interest in the announcement of two Pittston coal operators who are willing to contribute to a fund to defray the cost of a flushing program which will reduce the danger of mine caves. The state's contribution may possibly come from its \$200,000 disaster fund.

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Recent research at the Climax Molybdenum Company mine operations has shown that misapplication of metals for wear resisting parts may bring some otherwise profitable mining operations into the red.

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long is worth much more than twice as much in purchase price because of replacement and shut-down costs. However, it is difficult to evaluate various materials without exacting supervision.

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Anthracite Region's Largest Hoist is in Operation



Robert E. Hobart, mechanical superintendent of Lehigh Navigation Coal Company, Coaldale, Pa., is shown at the controls of the largest electric mine hoist in the anthracite region

TO BOOST the Nation's supply of coal, an electrically driven mine hoist that can "surface" an entire winter's supply of coal for a fairly large building in two minutes, went to work recently at the Lehigh Navigation Coal Company's No. 7 shaft at Lansford, Pa. This installation is the largest motor-driven mine hoist in the anthracite region, consisting of a Vulcan hoist and a 1,750-h.p. Westinghouse motor and control. The hoist has a cylindro-conical drum, one end 9 ft. in diameter, the other 15 ft. This drum will stow 1,566 ft. of 1½-in. active rope. 225 ft. of cable capacity on the 15-ft. drum will not be used at present, but is provided to take care of additional lift that will be required as mining is carried to lower levels.

The motor is a two-bearing, pedestal-type, wound rotor induction motor operating on 2,200 volts, three-phase power supplied at 25 cycles. A modern and extensive control system provides necessary safety considerations. A feature of the control is that the primary contactors are electro-pneumatically operated. In operation

the cage will make 93 trips per hour with a lift of 902 ft. This will involve rope speeds of approximately 3,000 ft. per minute. 9,000 lbs. of coal or 11,000 lbs. of rock can be handled on each trip.

Official recognition took place with a gathering of coal company officials, Vulcan Iron Works officials, Westinghouse Electric officials and Pennsylvania Power and Light officials, at the Coaldale colliery hoist house, to witness a complete demonstration of the capabilities of the new hoist. Following an inspection tour of the Coaldale colliery and breaker, an excellent dinner was served at the Mahoning Valley Country Club.

R. E. Hobart, mechanical superintendent, Lehigh Navigation Coal Company, acted as toastmaster during a very entertaining program in which the leading officials of the various companies interested, as mentioned above, explained many of the events leading up to the establishment of the new hoist. Afterward the guests enjoyed two very fine talking pictures presented by Westinghouse.

»»» The Sonman shaft of the Koppers Coal Company won the Class A safety banner for the best record achieved during February, it was announced at a meeting of the Joseph A. Holmes Safety Association at the Ebensburg Court House. The shaft did not have a lost-time accident during the month, when 20,902 tons of coal were mined.

The Class B banner was awarded the Cresson mine of the Pennsylvania Coal & Coke Corporation, which had no lost-time accidents while producing 17,360 tons of coal.

»»» A Joint Pennsylvania State Government Commission recently held a meeting in Harrisburg regarding anthracite coal strippings. A

group of prominent anthracite men offered the following testimony:

1. Anthracite stripping is an old industry.
2. By means of stripping, 100 percent of the coal is extracted, whereas less than 50 percent is removed by deep mining in the thicker seams.
3. That no arable land was being destroyed by stripping operations.
4. That the fatality rate in stripping was about 1 to 10 as compared to that of mines.
5. That any legislation which would affect materially the stripping industry would result in closing many mines, particularly in the Southern and Lehigh fields.

»»» The Solid Fuels Administration, through the Defense Supplies Corporation, has planned a new program which promises to relieve surpluses of the smaller sizes of anthracite coal. It proposes the following: Plants already using some anthracite will be urged to increase its use, and other plants that have discontinued the use of anthracite steam sizes will be visited by consulting engineers for the purpose of advising them as to resuming their use. Recent tests of the Bureau of Mines demonstrate the possibility of mixing the anthracite steam sizes with bituminous coal. When burned in certain types of equipment, particularly underfed stokers, this practice seems to be successful.

ALABAMA

»»» The Alabama Mining Institute announces the following officers: I. W. Rouzer, reelected for the eighth time as president; R. T. Daniel, Prince DeBardeleben and Herbert Tutwiler, vice presidents; Hubert E. Mills, secretary-treasurer; James I. Davidson, counsel. H. A. Berg, C. S. Bissell, W. F. Cobb, C. F. DeBardeleben, Jr., W. G. Hippard, A. R. Long, H. McDermott, Hugh Morrow, G. F. Peter, J. W. Porter, David Roberts, Jr., and B. F. Roden were named to the board of directors.

KENTUCKY

»»» Production of fluorspar in 1944 should total more than 500,000 tons, according to estimates obtained from reports made by producing companies, the War Production Board reported recently. This figure was submitted at a recent meeting of the Fluorspar Mining Industry Advisory Committee. Of the total production, 294,164 tons will be of metallurgical grade.

Consumption of metallurgical grade for the year is estimated to be 255,000 tons; acid grades, 168,500 tons. No estimates are available for ceramic grade, but it was expected that consumption will remain at the current level of about 3,000 tons a month.

Central



States

TRI-STATE

»»» A preliminary program has just been released covering the Twenty-sixth Annual Meeting of the American Zinc Institute, which is to be held at the Hotel Jefferson, St. Louis, Mo., on Monday and Tuesday, April 17 and 18.

On Monday morning Myron L. Trilsch will discuss the current outlook for zinc from the viewpoint of WPB. John D. Sullivan, of the Battelle Memorial Institute, will address the meeting on "The Post-War Future for Heavy Metals," and an official War Department motion picture will be shown.

The Monday afternoon session will open with a review of stockpiling legislation by Julian D. Conover, of the American Mining Congress. A round-table discussion on zinc mining will follow. T. H. Miller, of the Bureau of Mines, will present the long-range view, while R. B. Caples, of Anaconda Copper Mining Company; Evan Just of Engineering and Mining Journal; and Russell Paul, of New Jersey Zinc Company, will report on the western, Mississippi Valley, and eastern regions, respectively. James Douglas, director of the Zinc Division, will present the WPB angle.

Special features scheduled for Tuesday morning include a review of zinc smelting and refining by R. A. Young, of American Zinc, Lead & Smelting Company. The post-war outlook for zinc alloy die castings and galvanizing will be discussed by representatives of New Jersey Zinc Company and Wheeling Steel Corporation, while the subject of war manpower problems is also to be covered.

The annual dinner will be held on Monday evening. The guest speaker will be Charles M. Hay of St. Louis, now serving as General Counsel of the War Manpower Commission.

»»» The West 66 Mining Company has commenced preparations for an extensive open-pit operation on the Landreth land, a half mile west of Central City. A 1½-yd. Bucyrus power shovel has been used to dig a large drainage ditch from 16 to 20 ft. wide, 5 ft. deep, and 1,400 ft. long. Open-pit operations will be in the immediate vicinity of some old shallow mines in an area which was churn-drilled some 15 years ago by the Goldenrod Mining & Smelting Co. The ore deposit is reported to range in depth from 15 to 75 ft. and ex-

plorations are said to disclose blende, silicate and galena. Two Caterpillar "60" tractors and two 12-yd. crawler wagons are in use, in addition to the power shovel. It is said that the first ore will be either custom-milled or stockpiled until a washing plant is built on the site.

»»» The Western and Captain tailing retreatment plants and other holdings of the Westcap Mining Company have been purchased by the Cardin Mining and Milling Corporation. No changes are announced in the management of the company or the corporation. S. L. Kenney, of Miami, will continue in charge of the Nos. 2 and 3 tailing plants of the Cardin Corporation; Henry Hartzell, of Baxter Springs, in charge of the Western property; and William Ellison will supervise operation of the Captain tailing mill.

»»» Mining operations are being carried on at the old M. & H. No. 2 mill shaft, just west of Baxter Springs, by the Lawrence-McNulty Mining Co. Ore is being treated at the Mutual Mining and Development Company's mill at Hockerville.

MINNESOTA

»»» Another new experiment in open-pit mine haulage is being conducted by Butler Brothers at the Galbraith iron mine at Nashwauk, Minn. The balanced hoist method of helping loaded trucks out of the pit, negotiating a 12 percent grade, is contrived to harness the power and weight of an empty truck going down grade into the pit to assist the loaded truck pulling up the grade. The haulage system is 500 ft. The set-up consists essentially of two 24-in. gauge railroad tracks parallel to each other and about 13 ft. apart. Two 1-ton barney or push cars are arranged at each end of the cable to negotiate the track and serve through top-sheaves as the connecting link between loaded and empty trucks. This makes available the application of two truck motors to the task of hauling one load of ore out of the pit. It is hoped that the new experiment

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May 1-2

1944 Coal Mine War Conference

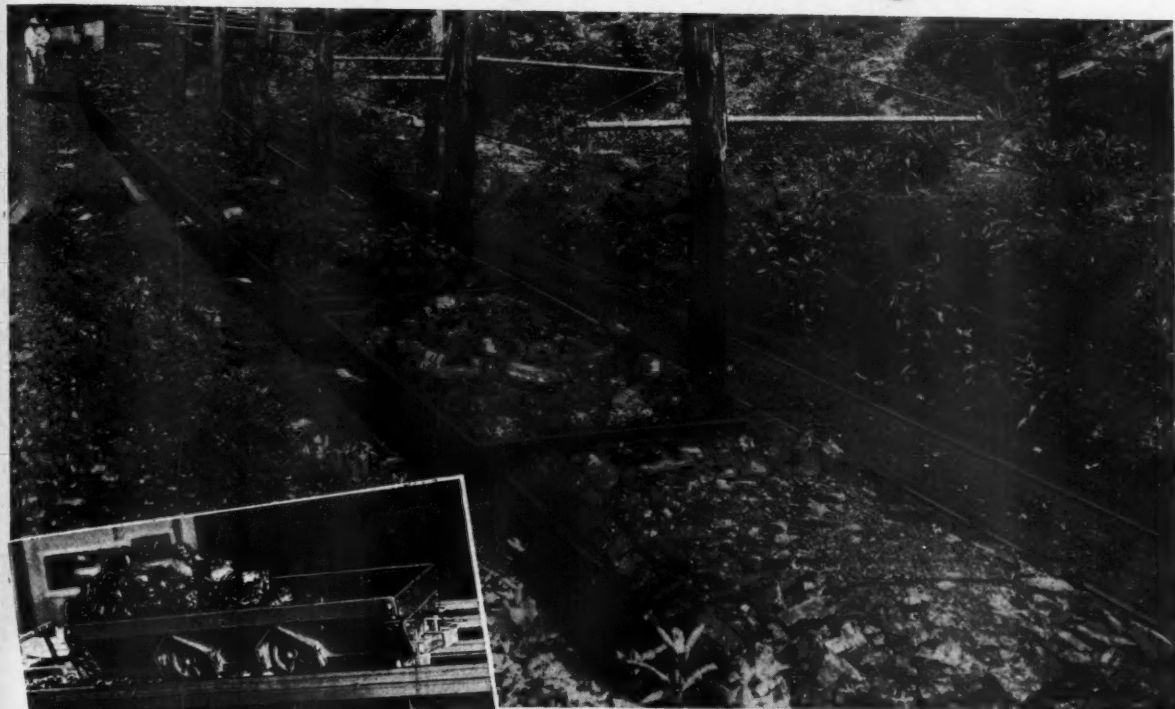
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★ Some day the sweetest sight to your eyes will be the constant even flow of S-D "Automatic" trains of coal coming out of your mine—the answer to top tonnage.

Now, don't just take a glance, but study carefully, the illustrations in this ad from top to bottom. Not particularly the cars but their action. First, let's look at top illustration. Now, bear in mind that this string of S-D "Automatic" cars never stops rolling after it leaves the mine until the cars return empty; and they'll pass another trip on their return to the mine.

Next, you see how S-D 1-2-3 "Automatics" lay the coal down gently, while in motion, one door at a time, without breaking the coal. This action is taking place in the third illustration—a full train in motion, discharging its coal—20 car loads a minute. The fourth illustration shows how your bin can be filled level full (possible only with "Automatics") when, for any reason, screening or cleaning plant is down.

Here you have the simple story of the most sensible guarantee for top production, minimum man power, at the least possible cost per ton. Reduced costs are certain. So certain, that we are willing to rent S-D "Automatics" to you on a basis so liberal that your cash savings will more than pay the rentals. After these savings have been proved, you may purchase the cars if you wish. You can't lose. Why hesitate? Write for full details now.

Sanford-Day Iron Works

KNOXVILLE

TENNESSEE

will greatly facilitate truck haulage in open pit mines, possibly in some cases negotiating grades as steep as 20 percent.

ILLINOIS

»»» State Senator Rice W. Miller, chairman of the Illinois Coal Products Commission, announced recently that an experimental coking plant is to be constructed at Hillsboro at a cost of \$35,000. The purpose of the new plant is to determine the relative costs of two possible methods of converting Illinois high-volatile coal into smokeless fuel for the St. Louis market.

One of the processes to be tested is the development of Ludwig Kern, at one time associated with the Krupp Works in Germany and now living in St. Louis. His process is said to be capable of manufacturing coke at a per ton cost of about \$2.50. The other process was developed through research by Corlus W. McKinney, an engineer of Belleville, Ill. Mr. McKinney's process is reputed to be capable of making coke at about one-half the cost of the Kern process. Both processes are promising and considered worthy of further experimental work.

Iron Ore Development at Steep Rock Lake, Ontario, Canada

FOR the first time in its history, Canada will during 1944 be exporting hard hematite iron ores to the United States iron and steel industry.

In a brief year-end summary of the new Steep Rock development in the Dominion's Lake Superior region, Lt. Col. G. G. Blackstock, executive vice president of Steep Rock Iron Mines, Ltd., forecasts first shipments in August. The area is close to the regular lake shipping routes and the Canadian Government, through the Canadian National Railways, is building permanent docks and ore-handling facilities at Port Arthur, Ontario.

The ore bodies lie under Steep Rock Lake and to reach them, the river system of which the lake is a part, first had to be diverted, after which the lake could be dewatered, by pumping, for open-pit mining. On December 31, the company took over from the contractor in charge of the diversion project which was one of the largest and most unusual undertakings in Canadian mining history. It was financed in part by a self-liquidating \$5,000,000 loan from Reconstruction Finance Corporation, the first RFC loan of this type made outside the borders of the United States. The pumping out of 125,000,000,000 gallons of water is now proceeding.

United States interest in the project

is due to the character and quality of the ore. Since it is high in iron content with output of 2,000,000 tons annually planned for the early years of production, it may be an important factor in economic utilization of lower grade ores from the United States iron ranges. The Canadian ores can be used as a sweetener.

"Even more important is the suitability of this lump hematite for open-hearth use," Colonel Blackstock comments. "In addition to investigations by the Battelle Memorial Insti-

tute, a full-scale test by a leading United States steelmaker established its outstanding qualities for this purpose. Much less scrap appears to be required. One Cleveland metallurgist, noting that an intensive salvage campaign in that community had produced 4,500,000 lbs. of scrap estimated that an equivalent war contribution would be provided by 450 tons of Steep Rock ore."

Cyrus S. Eaton, Cleveland, Ohio, is chairman of the Board of Steep Rock Iron Mines, Ltd.

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AUTOMATIC COUPLERS

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ARE RARE IN CONVEYOR BELTS

Every conveyor belt installation is considered an individual problem by United States Rubber Belt Engineers. Each belt is engineered on the basis of the type and amount of material to be handled, distance traveled, speed, changing elevations and other factors.

Right now, the full force of this broad range experience is brought to bear on the problems of engineering conveyor belts of synthetic rubber.

During the last six years, United States Rubber Belt Engineers have successfully designed and manufactured belts of synthetic rubber to meet a variety of *special* conditions. This experience is proving of incalculable value, now that synthetic rubber belts are a "must." We invite you to submit your questions and problems relating to conveyor belts for your individual operations.

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U. S. SYNTHETIC RUBBER BELT conveying highly abrasive oil-sprayed coke. This 680-ft. belt, in successful operation for 4 years, is still in excellent condition. Its perfect alignment under capacity loads reflects U. S. Staff Engineering.



LABORATORIES ALWAYS AT YOUR SERVICE. U. S. Belts are engineered by men who understand conveyor belt operation problems and know how to compound synthetic rubber for successful fabrication in conveyor belts.



SLOPE BELT SAME LENGTH as the "Twins" shown above—but differs in width, number of plies and other design features. However, U. S. Belts are alike in one respect... all are engineered for flexibility and perfect alignment.

Listen to the Philharmonic-Symphony program over the CBS network Sunday afternoon, 3:00 to 4:30 E.W.T. Carl Van Doren and a guest star present an interlude of historical significance.

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World's Largest Shovel Increases Nation's Coal Stock Piles

RECENTLY, the world's largest power shovel went into action to do its share in alleviating the Nation's critical coal shortage. This huge coal stripper, with a capacity of 35 cu. yds. at every bite, was built by the Marion Steam Shovel Company, Marion, Ohio, and is owned by M. A. Hanna Company, St. Clairsville, Ohio. It is stripping overburden at the Hanna coal properties near George-

or 1,600 tons. It required 50 railroad cars to ship.

This Type 5661 coal stripping shovel is designed especially for coal stripping service in heavy overburden. It follows a pattern of engineering which has proven very successful on other strip operations, where several such machines have been at work either opening up new properties, or reopening old cuts deemed unprofit-

favorable digging angles and a long radius of clean-up are obtainable.

Since this machine rests on the coal face during removal of overburden and must follow the coal pitch, the question of keeping the machine level during travel and operation is of vital importance. To make sure this huge machine is level, regardless of the contour of the ground, hydraulic equalizing and leveling jacks are provided. The action of the hydraulic jack system is entirely automatic and electrical and is positive in its action in keeping the lower frame level while traveling as well as digging.

To give this machine the greatest degree of flexibility and maneuverability, the crawlers are so arranged that the belts swivel independently both laterally and transversely. This allows the shovel to conform to the coal surface without imposing undue strain.

Coal stripping with huge shovels, making the removal of deep overburden from a coal seam a profitable enterprise, is responsible for over 10 percent of the Nation's coal supply. In 1942 the Nation's strip mines produced 63 million tons of coal. In 1943 this figure increased to around 80 million tons with further increases anticipated in 1944.



Here is the world's biggest stripper shovel already actively engaged in meeting urgent demands for coal

The 35-cu. yd. dipper provides garage space and room to spare for this Chevrolet truck



town, where the overburden ranges from 25 ft. to 75 ft. in depth.

Some idea of the size of the machine is gathered from the accompanying photo and the following data:

Two dipperfuls fill a regulation railroad coal car to overflowing.

One dipperful will fill a room 9 ft. by 12 ft. by 9 ft.

One 35-cu.-yd. dipperful is equal to 52½ tons of material.

If the machine was placed in the middle of a regulation city block, it could reach over into the next block and pile dirt on top of a seven-story building 240 ft. away.

The electric power required to operate this huge shovel would serve a community of 3,000 people with all of its power needs.

The machine weighs 3,200,000 lbs.,

able with smaller equipment due to the excessive ratio of overburden to the coal.

Engineers have given particular consideration to the front end construction of this machine. They have reduced the weight of the boom by mounting the crowding machinery on the gantry, thus relieving the boom of the stresses and shock imposed by the crowding action. As a result, the boom is comparatively light but with ample strength to meet the most severe digging requirements.

The "knee-action" front end permits the use of a larger dipper and greater working ranges than can be obtained when the conventional front end design is employed. Because of the movable fulcrum, which corresponds to the shipper shaft, especially

»»» Fire at the Jefferson Coal Company's strip mine tippie between Bloomingdale and Smithfield recently completely destroyed the structure at an estimated loss of around \$25,000. Charles Wenner, superintendent, estimated that this would mean a production loss for at least six months. The mine normally employs 125 men and has a daily output of over 3,000 tons. Fire trucks from neighboring points called to the scene arrived too late to save the tippie from complete destruction. It was thought the fire started from a spark from the machinery igniting the coal dust.

PETER F. LOFTUS Consulting Engineers

ENGINEERING AND ECONOMIC SURVEYS, ANALYSES AND REPORTS ON POWER APPLICATIONS AND POWER COST PROBLEMS OF THE COAL MINING INDUSTRY

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Western



States

WYOMING

»»» Senator Joseph C. O'Mahoney (D., Wyo.) recently urged the War Department and Selective Service to take immediate steps to defer coal miners in Wyoming and 14 other coal-mining states in order to maintain an unbroken flow of supplies to Pacific war fronts.

He said in an interview that he has asked both Undersecretary of War Robert P. Patterson and Selective Service Director Gen. Lewis B. Hershey to defer the miners on the ground that they cannot be replaced in sparsely populated mining areas.

"The transportation of war materials and men to the Pacific coast will be materially impaired if Selective Service does not immediately recognize the fact that mining of coal to fuel the railroads cannot be interrupted," Senator O'Mahoney said.

The Senator suggested that the War Department lower literacy standards to secure more men for the armed services and relieve pressure on coal areas.

COLORADO

»»» The Valley mine, located 3½ miles east of Leadville, in Evans Gulch, is working five men one shift a day, producing lead oxide ore, and reports shipment of about 4,000 tons of ore to the local smelter during 1943. The mine is under lease to Harry Sundstrom.

The New Monarch mine, a short distance south of the Valley mine, has been able to make a shipment of 850 tons of ore to the Arkansas Valley smelter. Mike Bonan has seven men working here on cerussite lead ore containing some gold and silver.

»»» Core drilling and bulldozing is being done near the Cold Spring property in the Boulder area in an effort to discover new veins and extend the operations of the Wolf Tongue Mining Company, subsidiary of the Firth-Sterling Steel Company, of McKeesport, Pa. The Nederland mill is reported shipping a carload of high-grade concentrates a month. Capacity could be doubled if more mill hands were available.

»»» The Cobalt No. 1 mine, 15 miles southwest of Colorado Springs, is reported to have opened high-grade copper ore.

»»» The Vanadium Corporation's Conger mine and mill are both working one shift and would work more if men were available. The Vanadium Corporation has also leased out a number of properties.

»»» Shipments are going steadily forward from a good-sized body of medium-grade ore on the 300- and 500-ft. levels of the Patti-Rosa mine of the United Gold Mines Company, near Cripple Creek.

»»» The California Gulch Mining & Milling Co., with a completely changed-over flow sheet, is now treating approximately 14,000 tons of lead, zinc and copper ore per month. The bulk of this ore is coming from old mine dumps formerly considered too low grade to mill profitably, and some of the ore is coming from underground workings. The operation is reported to have produced some 4,000,000 lbs. of strategic metals in

1943, in addition to iron pyrites needed in smelter operations. The mills are operating on three shifts seven days a week, with 40 men employed. Sixteen 5-ton trucks loaded by three power shovels with a bulldozer in assistance on roads and cleanups bring the material in from Breece Hill, a haulage distance of about 3 miles.

»»» Recently the 200th car of ore was shipped from the workings of the Grace Greenwood mine of the LeClare Consolidated Mines Company.

»»» The Fortune mine, 4 miles east of Leadville, produces around 500 tons of ore a month, with a crew of about 18 men. This is the mine which suffered from fire in December, 1942, when over 40 ft. of shaft and the head frame and surface plant were destroyed. The shaft has been deepened to the tenth level and contract has been let to deepen it another 100 ft.

NEW MEXICO

»»» Definite date for the annual meeting of the New Mexico Miners and Prospectors Association has been set for April 21 and 22. The convention will be held in the

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I-T-E

Representatives in Principal Mining Areas

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Hilton Hotel, in Albuquerque. The meeting comes at a time when the industry is beset by a most crucial manpower situation, due to determination of the Selective Service Board decision to rule out deferments for the class groups 18 to 25. The state as a whole is in need and could easily absorb 1,000 additional miners. Simple computations disclose that the industry's ranks will be depleted by at least 1,000 of its personnel, thus limiting the 1944 production schedule. However, the heads of the mining firms have taken a very firm hold of the situation and intend to spare no effort to keep up the production pace. Another 30 days will show whether the industries will absorb the impact of this ruling or if older but still capable men will come to the rescue by taking employment at the mines.

»»» The St. Louis Smelting and Refining Company has leased the iron deposit of the Kennecott Copper Company north of the Santa Rita pit and east of the Carney shaft of the Peru Mining Company. The development is well under way and recent loading, at the Union Hill siding of the Santa Fe Railway Company, averaged well over 300 tons of iron ore daily. The operation is in charge of Harry Kline, resident manager, who reports that the operation is at present held down by lack of labor. However, the labor situation is loosening up at present and the company looks forward to producing 500 tons a day in the very near future.

»»» The Royal John mine, in the Black Range district, is showing new activity. Considerable new machinery has been installed and development speeded from which some very fine zinc ore is being shipped to the mill at Hanover. The property is owned by Al Owens, of Hurley, N. Mex.

»»» The mill south of Silver City, built by the Non-Metallic Corporation as a fluorspar mill, bought by the Continental Chemical and Ore Company two years ago and converted to the processing of lead and zinc, was recently acquired by the New Mexico Ore Processing Company. The mill is shut down for alterations and installation of considerable new equipment to increase capacity and improve processing. D. W. Schmitt, general manager, is also general manager of their mine at Central, N. Mex.

UTAH

»»» Net profit of the Silver King Coalition Mines Company for the year ended December 31, 1943, amounted to \$217,985.19, according to President James Ivers in his annual report to stockholders.

During the year Silver King produced 95,800 tons of milling ore and 218 tons of first-class ore. The company produced and sold to smelters 9,895 tons of lead concentrates and 6,097 tons of zinc concentrates.

Both development and production suffered throughout the year as a result of manpower shortage so marked as to seriously upset operational balance. The number of employees in service averaged 402 per work day, compared with in excess of 600 in former years.

"On January 15, 1944, a directive from the Nonferrous Metals Commission awarded employees a 25 cent per shift increase in wages, retroactive to July 1, 1943. This award has been appealed to the War Labor Board both by the operators and by the union," Mr. Ivers said, continuing: "As of January 1, 1943, the War Production Administration again modified the company's quota on zinc to A-0 from a former quota of A-125 tons, leaving the lead quota as formerly, at A-150 tons."

»»» Net operating profit of the Tintic Standard Mining Company and wholly owned subsidiaries for 1943 amounted to \$266,306.61, according to James W. Wade, president, in the annual report.

The quantities of metals contained in ores shipped from the Tintic Standard mines and the values thereof were as follows: Lead, 11,143,917 lbs., having a value of \$724,355.62; silver, 674,738 ozs., having a value of \$476,533.76; gold, 2,533 ozs., having a value of \$88,432.95; copper, 789,591 lbs., having a value of \$84,289.40;

and zinc, 67,557 lbs., having a value of \$5,573.43. Mill dump tailings were sold for \$44,465.03.

The investment of the Tintic Standard Mining Company in a fluorspar property and mill in Beaver County, Utah, amounted to \$163,551.82. A tract of patented land with water rights was purchased on which a mill is being erected. The mill, 150-ton per day capacity, is expected to be completed and ready for operation within the next 60 days.

ARIZONA

»»» The Bullard mine, located about 12 miles northwest of Aguila, Ariz., is reported to have shipped a total of 28 carloads of ore since December. A crew of 10 men is employed under the direction of J. P. Klein. The ore carries values mainly in copper, with some gold, with shipments going to the Hayden smelter.

»»» The Little Butte mine in the Plomosa mining district, Yuma County, has shipped its first car of copper fluxing ore. The assay showed 1.04 oz. of gold. L. B. Havre has a crew of 5 men working. Ore was shipped to the Hayden smelter.

»»» "Arizona metal production for the five-year period 1939-43, inclusive, outdistanced the output of the World War years 1914-18, despite manpower shortage," reports Eldred D. Wilson, geologist of the Arizona Bureau of Mines, Tucson.

"The state yielded more copper from 1939 to 1943 than during the World War I period, and more lead

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and zinc than in any previous five-year period, but the market value was far below that of the World War I and 1925-29 periods.

"Copper production during the past five years exceeded the World War I output of 3,051,843,629 lbs. by 9 percent, but its value was almost \$300,000,000 less. For 1939-43, zinc production was more than double the 1914-18 figure of 70,855,652 lbs., its total value only about 1.66 times that of the previous war years. Lead increased in production about one-third in 1939-43 over the 1914-18 poundage of 99,773,258, its value increased nearly proportionately.

Reporting on other factors concerning Arizona metal production, Wilson said: "The state has led the United States in copper production each year since 1910. The principal new copper producer in the state in 1943 was the Castle Dome open-pit mine, near Miami. During World War I, Ajo was the only large open-pit mine in Arizona, while now a total combined capacity of more than 75,000 tons daily is reached at Morenci, Ajo, and the Castle Dome.

"Price premiums offered since early 1942 have stimulated numerous small copper properties, of which the Christmas, in Gila County, and the Control, in Pima County, have yielded

on the order of 1,000,000 lbs. in a year.

"Arizona's 1943 copper production came from 11 major mines, while at the beginning of World War I the state's production was principally from Bisbee, Globe-Miami, Ray, and United Verde mines.

"Inactivity in the gold-quartz mines and a decrease from some of the copper mines placed Arizona's 1943 gold output 80,650 ozs. below the figure of 253,651 of 1942, valued at \$8,877,785. More than 55 percent of the 1942 production in gold came as a by-product of copper ores, chiefly from Bisbee, Jerome, Ajo, Superior, and Morenci; some was derived from lead and zinc ores, and about 1.4 percent came from placers."

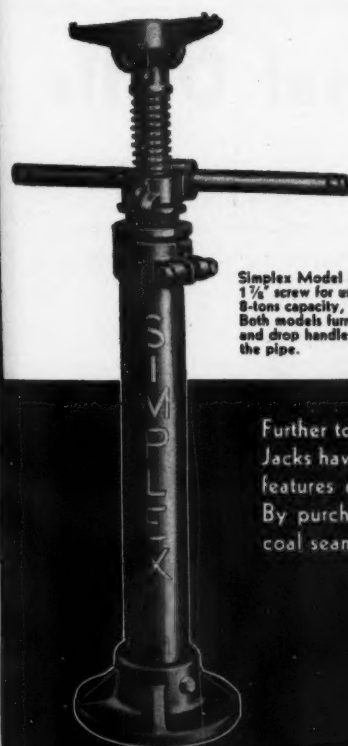
NEVADA

»»» Only one gold dredge is now washing gold ore in Nevada. Located in the broad gulch below the old camp of Manhattan, it is restricted to only one shift. It is the largest dredge ever operated in Nevada and at unrestricted times exceeded its rated capacity of 12,000 cu. yds. per day. The present restrictions confine the work to local men who are too old or otherwise unfit for work in other mines or war plants.

The hull of the Manhattan Gold Dredge Company dredge is about 172 ft. in length and 60 ft. wide and is capable of digging to 70 ft. below water level. There are 107 buckets on the digging ladder, which reaches a speed up to 40 buckets a minute. A hydraulic giant is used in washing down the bank ahead of the dredge. Water is brought in through a 7-mile pipeline.

»»» Maj. Leverett Davis, manager of the Callahan Lead-Zinc Company, working the zinc-cadmium ores at the Mount Hope mine, 25 miles north of the famous old camp of Eureka, says that ore shipments by truck at the rate of 50 tons per day are being carried 70 miles to the Southern Pacific R. R. for shipment to an eastern smelter. It is said that substantial quantities of shipping-grade ore have been exposed in old tunnel workings. The Federal Bureau of Mines is reported to have authorized exploratory drilling in the vicinity.

»»» Cordero Mining Company, operating the largest quicksilver property in Nevada, has closed its mine and furnace plant south of McDermitt, in northern Humboldt



Simplex Model M17 Mine Roof Jack, 16-ton capacity, 1 1/2" screw for use with extra heavy 2" pipe. Model M19, 8-ton capacity, 1 1/4" screw for use with standard 2" pipe. Both models furnished with lever nut or combination slide and drop handle, and a rugged base that is bolted through the pipe.

New Simplex Mine Roof Jacks

*Cut Timbering Costs
To the Bone!*

Further to reduce timbering costs per ton of coal mined (an economy in which Simplex Jacks have long figured), these new models have been developed; providing the added features of reduced equipment inventory and adaptability regardless of seam height. By purchasing the screw assembly and base, these jacks can be used in mines having coal seams of variable height.

Templeton, Kenly & Co.
Chicago (44), Ill.

Better, Safer Mine Jacks Since 1899

Simplex
LEVER SCREW HYDRAULIC
Jacks

County, due to the collapse of the quicksilver market. The furnace plant has a capacity of 125 tons.

Some development work is reported, but the furnace fires will remain out indefinitely. Cordero was among the nation's 10 largest producers of mercury last year.

»»» The speedy closing of virtually all small tungsten mines in Nevada as a result of the termination by Metals Reserve of the price premium on tungsten is predicted by state authorities. Some of those producing tungsten as a side line may be able to continue.

»»» The Greenan-Kerr mine, in the Majuba Hill district of Nevada, which has already shipped over 200 carloads of copper ore since June, 1943, to the Garfield smelter, is also producing some copper-tin ore. Two shipments of these concentrates have been made to the Government tin plant at Texas City, Tex.

»»» Winnemucca reports state that Getchell Mine, Inc., which was placed in operation in 1938, has produced more than \$4,000,000 in gold. The property is located northeast of Winnemucca. It is now producing about 700 tons of gold ore and some arsenical ore daily. Its mill has also

been treating a large quantity of tungsten ore from its own and from near-by properties. Before the war the mine was handling about 1,000 tons of oxide ores daily, but is now working exclusively on sulphides.

CALIFORNIA

»»» Quicksilver market conditions and the low grade of ore now available are reported as the causes of the forced lay-off of two-thirds of the crew at the Sulphur Bank mine of the Bradley Mining Co. near Clearlake Park, Lake County, Calif. Worthen Bradley, of San Francisco, is president of the company.

»»» Diamond drilling work so far carried on at the old Cerro Gordo mine near Keeler in Inyo County, Calif., has proved satisfactory. The present exploration crew will be enlarged immediately and regular mining operations will be started in the near future by Imperial Metals, Inc., of which Sam B. Mosher of Los Angeles is president.

»»» The Argonaut Mining Co., Ltd., which suspended operations at its Argonaut gold mine at Jackson, Calif., in March, 1942, has reported a net loss of \$50,511 for the year ended December 31, 1943, as compared to

a net loss of \$17,565 for the previous year.

»»» It is reported that gold and tungsten are being shipped in increasing amounts from the scheelite area of the famous North Star mine. The area was leased from Empire-Star Mines last year by New Verde Mines Co., with production starting in September. Gold is recovered as a by-product of tungsten mining operations. The mine was worked on a large scale as a gold producer before the WPB order banning production. It was operated by Empire Star Mines, then one of the leading American gold producers employing approximately 1,200 men in six mines in Yuba and Nevada counties.

New Verde Mines Co. had previously operated the Silver Cloud quicksilver mine in Nevada.

»»» W. L. Brown, president of the Carson Hill Gold Mining Corp., said recently that estimated ore reserves of the Carson Hill property indicate a promising future for reopening after the war if the gold market conditions are favorable. The company's gold operations at Melones, Calif., are now suspended. Net loss for the fiscal year ended September 30, 1943, is reported to be \$99,408 as compared with a net profit of \$37,650 for the previous year.

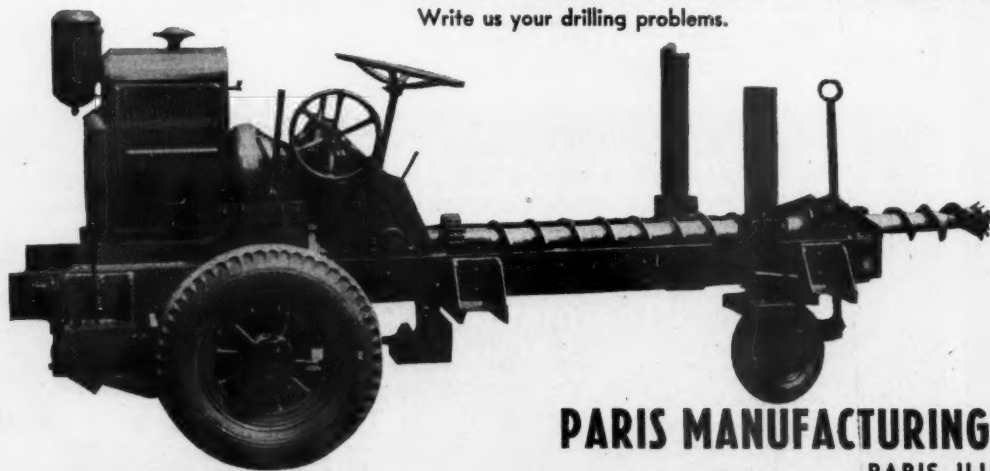
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»»» Polaris Mining Company, owning property east of and adjoining the Sunshine mine, and which is operated on an equal partnership basis with Sunshine, has declared a dividend of 10 cents a share, totaling \$200,000 and payable April 15 to stockholders of record March 18. This is the first dividend for Polaris since June 26, 1942, when a distribution of 3 cents a share was made, and brings the total dividend record to date to \$540,000. The Polaris mill was recently converted into a zinc-lead flotation plant to treat ores from the Hecla's big sink-and-float tailings project at Osburn and is treating 300 tons of this feed daily, while the Sunshine Company has been treating the silver ore mined from the Polaris-Sunshine "No Man's Land" area. The present Polaris dividend has been made possible through the development of rich bodies of lead-silver ore in the Chester vein, north of and paralleling the Polaris vein. Because of this discovery Polaris stock has advanced in the past six months from 40 cents to over \$3 per share.

»»» Lucky Friday Silver-Lead Mines Company is developing a very promising body of high-grade silver-lead-zinc ore, at a depth of 800 ft. Recently the shaft was continued to the 800 level, and on this new deep level the vein shows a width of 16 ft. and average mine assays indicate the ore carries values of 94 ozs. silver, 12 percent lead, and 38 percent zinc. The vein has been followed 50 ft. west of the shaft and 50 ft. east, showing 2 ft. wide of high-grade ore in the west end and 7 ft. wide in the east end. The balance of the vein matter across the 16-ft. vein width carries enough silver to make the entire vein filling commercial mill feed. From the 100 ft. of drifting on the 800 level the company has accumulated a stockpile of about 1,000 tons of high-grade mill feed, to be sent to the Golconda mill.

»»» Within the past two years the Coeur d'Alene mining district has developed three major sized ore bodies which are considered by mining engineers to be the largest discoveries of new lead, zinc, and silver ores to have been found in the United States in the last 30 years. An interesting fact is that all three of the discoveries have been at great depth. The first to be recognized was in the Emery and Mac veins of the Bunker Hill M. & C. Company, in the Bunker Hill mine. These two big veins have been opened and extensively developed on the 2,300 or bottom level of

the mine and show "good promise for further deeper mine development."

The next discovery was made last June by the Sunshine Mining Company on the 2,700-ft. level, 80 ft. below sea level, in driving a crosscut for the Polaris Mining Company to prospect what is known as the Chester vein. The "last chance" crosscut on the 2,700 level opened about 10 in. wide of very rich ore and drift work soon revealed it to be of major importance.

The third major discovery in the district was made by the Federal Mining & Smelting Company in the

latter part of 1943, when they opened a large and rich vein of lead-zinc ore on the 2,400 level of the Page mine, at Kellogg. This vein has now been opened for a length of 350 ft. in 6 ft. wide of ore averaging 15 percent lead, 10 percent zinc, and 15 ozs. in silver.

»»» The Sunshine Mining Company announces a dividend of 10 cents a share, the first division of profits in 1944, amounting to \$148,882, and payable March 31 to shareholders of record March 1, bringing the total dividend record to \$23,343,812.

PAPER Plays a Part in Coal Production Too—

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Manufacturers Forum

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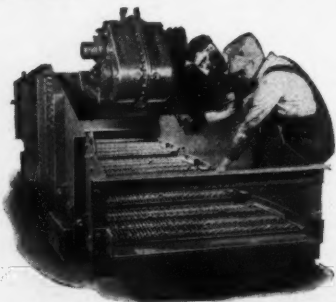
Industrial solid tires of high conductivity compound, used on equipment in plants manufacturing gunpowder and other highly combustible materials, are now being made of synthetic rubber, it was disclosed recently by the United States Rubber Company.

With constant flexing in service of any high conductive rubber tending to decrease its conductivity, a direct tire-to-tire comparison revealed that when operating under similar conditions the synthetic rubber tires are equal to, or better than, the same type of tires made previously from natural rubber.

As industrial equipment often builds up static electricity which cannot be dissipated by regular tires, high-conductor tires are so compounded that they will dissipate the charge harmlessly before a spark is created.

Vibrating Screens

A new tensioning principle is employed in the design of the End-Tension Deck, now made available by Allis-Chalmers on Low-Head, Aero-Vibe, and Ripl-Flo vibrating screens. The deck can be used for wet and dry screening, washing and dewatering processes.



The desirability of maintaining an even bed depth in screening processes for the coal, ore, rock, chemical and food industries led to the design of a deck which eliminates transverse arching of the screen surface, as with transverse single- and double-crowned decks. By employing a series of longitudinally-tensioned transversely-flat screen surfaces the End-Tension Deck inherently maintains even depth of material.

The screen is tensioned by clamp bars at the ends of the screen and by intermediate adjustable bars when

more than two screen sections are used.

A distributing plate at the feed end of the screen distributes material uniformly over the entire width of the screen to reduce surface wear.

Sections of the deck may be turned end for end and upside down for longer screen life. Transverse supporting bars on the underside of the deck are covered with molded rubber strips, and act as individual drip strips to assist in more efficient draining of the material in washing and dewatering processes. The feed end of each section can be furnished with a blank surface designed to obtain a pool-washing effect for scrubbing and scouring the material.

Further information on the End-Tension Deck may be obtained by writing Allis-Chalmers Manufacturing Co., Milwaukee 1, Wis., for Bulletin B-6321.

New Low Temperature Metallic Flux

Mogul Flux was developed by research engineers of the Metallizing Company of America to overcome obvious disadvantages characteristic of many soft soldering compounds. Mogul Flux solves these problems and simplifies soldering and tinning operations, speeds up production and saves time.

The new flux has a lower melting temperature than soft silver solder on initial heats and once activated will work on temperatures slightly higher than 60/40 solder. This cuts down warpage, and material hardness changes and stresses. It is faster because compounded of finely ground pure metals, balanced to attain high tensile strength and amazing surface adherence. Its low surface tension permits the tinning of close tolerances such as thread fits, etc. Many combinations of metals may thus be treated, such as aluminum and copper, cast iron, steel, etc.

Due to a new discovery in the vehicle used as the tinning and cleaning agents a proper density of deposit may be made on most metals. Tensile pulls of 2,500 p.s.i. have been made without the metal deposit separating from the surface on both ferrous and non-ferrous metals readily used as a brazing agent. It is suitable for inaccessible places such as fins and tubing in high-pressure radiators and is now being used on war contract work as well as maintenance.

Full information will be furnished on request to the company at 1330 West Congress Street, Chicago, Ill.

Folding Stretcher

An extremely compact folding stretcher has been developed that can be carried readily in most any vehicle, small plane, or carried as a pack on the back of a person, using the leg straps for a harness. The stretcher is so constructed that it can utilize an ordinary sedan as an emergency ambulance.

Simplicity of construction and assembly feature this stretcher. There are no loose parts to assemble; simply



unfold and lock into position. The hinge is so designed that should the four fasteners fail to be secured, the stretcher still remains rigid without danger of collapsing.

Provision is made for securing the head with a bandage for immobilizing neck fracture cases; the lower section is divided for ease of splinting, with an L-shaped attachment for traction splinting of either leg; traction splinting of the arms may be accomplished by use of well-placed bandage holes. Victims may be carried in near upright positions when necessary to lift through manholes or other confined spaces.

The stretcher is not only practical as a litter but may also be used as an adequate splint for any part of the body. Though weighing but 16

lbs., tests have proven it will withstand weights well over half a ton.

These stretchers are distributed by the E. D. Bullard Company, 275 Eighth Street, San Francisco 3, Calif.

New Heavy Duty Signal Switch

The Mosebach Electric & Supply Co., 1152 Arlington Avenue, Pittsburgh 3, Pa., has recently perfected a Heavy Duty Signal Switch (Cat. No. 4050), for safe and efficient underground haulage.



An outstanding feature of this signal is its unfailing ability to warn the motorman of existing danger. The switch is wired in series with the signal lights so that if one light fails the entire system fails. This eliminates costly mine accidents.

This Heavy Duty Signal Switch is designed for roof or rib mounting and can be conveniently operated without leaving either motor or trip. The extra heavy contact jaws and switch blades are designed for rough usage. In addition, the Mesco Heavy Duty Signal Switch is easy to install. Further details will be forwarded on request.

Truck Drivers Can Save Rubber

Truck drivers are the "shock troops" in the battle being waged to conserve the rubber in truck tires, one of the most critical shortages in the present rubber emergency. Tire engineers of the B. F. Goodrich Company point out that the service which truck tires give is largely in the hands of the driver, even though the best possible tire maintenance is provided by others.

Good driving by commercial vehicle operators can save much of the priceless rubber now on the wheels of the nation's trucks, while poor driving habits can result in severe tire damage and rubber wastage.

To assist truck drivers to save all the rubber possible Goodrich tire engineers make the following suggestions:

1. In making a right or left turn, turn sufficiently wide so that rear tires do not run up over the curb. This avoids throwing all the weight on one side of the vehicle and the resulting severe impact on the tire as it runs over a curb. It also helps

prevent a common cause of misalignment.

2. Keep all wheels of the truck or tractor-trailer unit on the highway. Avoid weaving off the pavement onto the shoulder because, in driving back on, tires can be cut or bruised.

3. Be careful around loading docks to prevent tires being crushed against curbs or bumpers.

4. Be alert to notice wheel misalignment conditions and to report peculiarities in steering.

5. Except in emergencies, anticipate stops and use brakes moderately. Severe use of brakes takes its toll in rubber, as can be seen by the black streaks of rubber left on the highway.

6. Avoid striking obstructions and holes in the road, which can do much damage.

7. Do not drive at excessive speeds. When heavy loads are carried, and during hot weather, speed should be reduced accordingly.

8. Report promptly any unusual condition of the equipment, such as bent rims, wobbly wheels, etc., which might reduce tire service.

CATALOGS AND BULLETINS

AIR COMPRESSORS. *Schramm, Inc.*, West Chester, Pa. Catalog 4215 illustrates in detail the No. 60 type of compressor in various mountings for construction and engineering fields.

BALL BEARINGS. *New Departure Division, General Motors Corp.*, Bristol, Conn. A new booklet entitled "Making Them 'Round'" by means of illustration and clear text, presents a very interesting story on the manufacture of ball bearings.

BELT CONVEYORS. *Robins Conveyor Incorporated*, Passaic, N. J. A new bulletin "This Is Robins" describes not only the pioneering efforts of this company but also gives a complete illustrated description of its entire present-day extensive manufacturing operations.

CAR PULLERS. *The Jeffrey Manufacturing Co.*, Columbus 16, Ohio. Bulletin 774 illustrates and describes two types of "all purpose" car pullers, giving complete specifications and data from which to figure capacity on straight and curved track.

CLEAN AIR. *Logan Engineering Co.*, Chicago, Ill. Bulletin 543-A describes pictorially and with engineering data how the Aridifier operates to eliminate pollution of intake air which lessens compressor efficiency. Complete description of the Aridifier which on test has demonstrated its ability to remove more than 92 percent of the contamination of compressed air lines, is given.

COAL MINE CARS. *Pressed Steel Car Co., Inc.*, Pittsburgh, Pa. Catalog No. 72-H describes this company's entire line of modern steel coal mine cars, including illustrations and data on all types for dumping in any direction.

COMPRESSORS — STATIONARY. *Sullivan Machinery Co.*, Michigan City, Ind. Bulletin A-52 of 56 pages describes the company's line of heavy duty two-stage air-cooled compressors for industrial plants, mines and heavy contracting. Many installations are illustrated and descriptions are given of available sizes, types and drives, together with construction details. There is also information on foundation requirements, regulation, accessories and servicing.

DIESEL ENGINES. *Worthington Pump and Machinery Co.*, Harrison, N. J. Bulletin S-500-B36B describes Worthington type CC diesel engines which are of the four-cycle trunk-piston type using direct fuel injection system. The complete specifications are given, together with line diagrams and useful application data.

HARD RUBBER PRODUCTS. *The B. F. Goodrich Co.*, Akron, Ohio. Catalog Section 9405 lists the distinctive qualities of hard rubber which make it unique as an engineering material among all the various plastics. Applications of various hard rubber types are listed, as well as the kinds of products which can be successfully manufactured from it. Suggestions for machining and tables of properties are included.

INDUSTRIAL PUMPS. *Joshua Hendy Iron Works, Pomona Pump Co. Division*, Sunnyvale, Calif. Catalog No. 43 is designated to give a complete story of each Westco Pump and brief descriptions of Pomona Pumps. Many charts and diagrams are offered to aid in setting up specifications. Several pages of engineering data also included.

ORE DRESSING NOTES. *American Cyanamid Company*, 30 Rockefeller Plaza, New York City. No. 12 of Ore Dressing Notes described fine ore concentration by heavy-media separation processes. Several flow-charts of pilot tests are given together with a complete description of the completed pilot plant.

PRESSURE-TREATED LUMBER. *Koppers Company*, Wood Preserving Division, Pittsburgh. A bulletin on this subject is offered as a guide in material selection for mining engineers, contractors and maintenance superintendents. It explains the several processes by which lumber is treated to protect it against decay, marine borers, acids, termites and fire. Typical mining installations and a reference table of recommended uses of pressure-treated lumber in mining and other fields are included.

RUBBER FACTS. *United States Rubber Company, Publicity Department*, Rockefeller Center, New York. "Us" magazine has issued a number, "100 Years' Experience" in which the company's history and experience in the production of vulcanized rubber is given. Included is a tabulation of both peacetime and wartime activities of the various divisions of this company.

WIRE NUTS. *Ideal Commutator Dresser Company*, 1287 Park Avenue, Sycamore, Ill. A 4-page booklet describes the interesting new Wire-Nut method of avoiding the use of solder in forming joints in electrical wiring.

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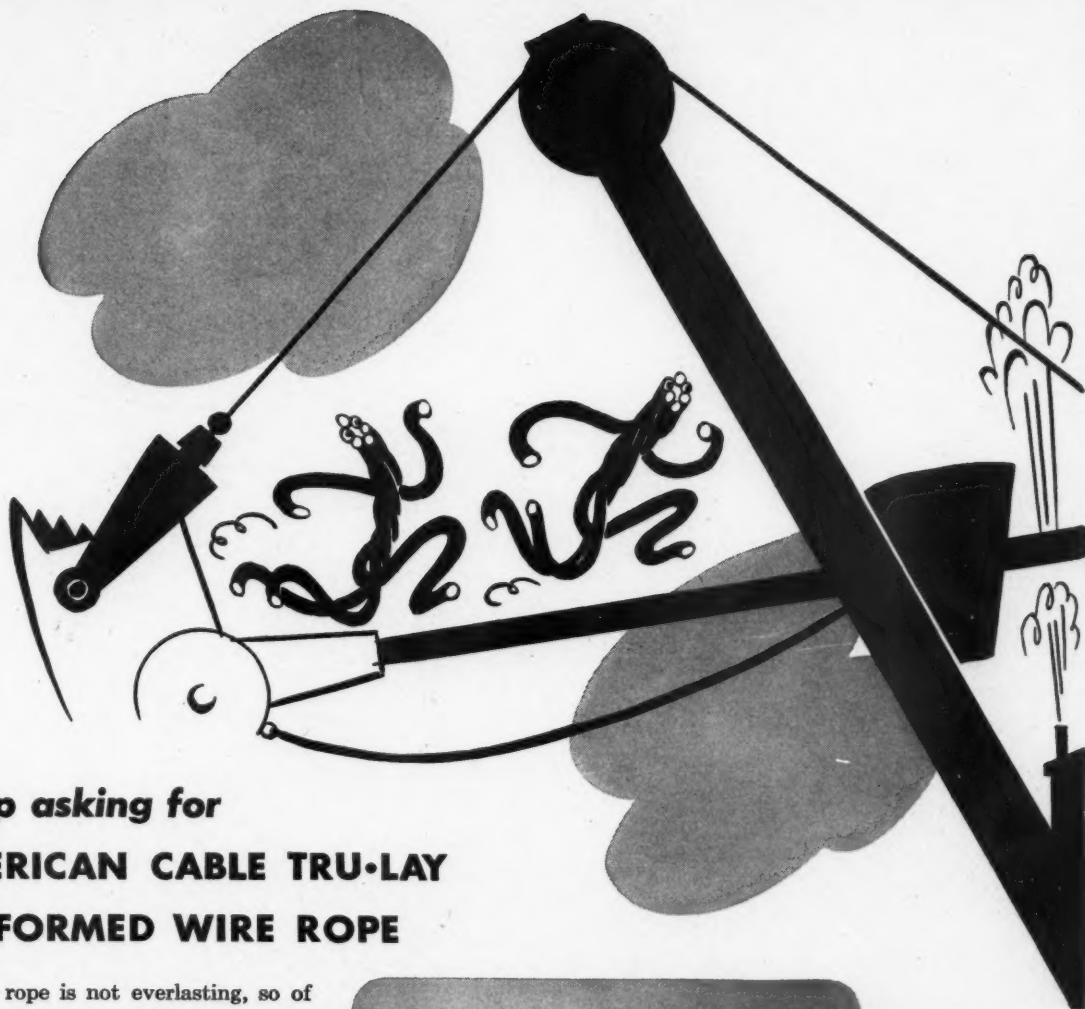
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